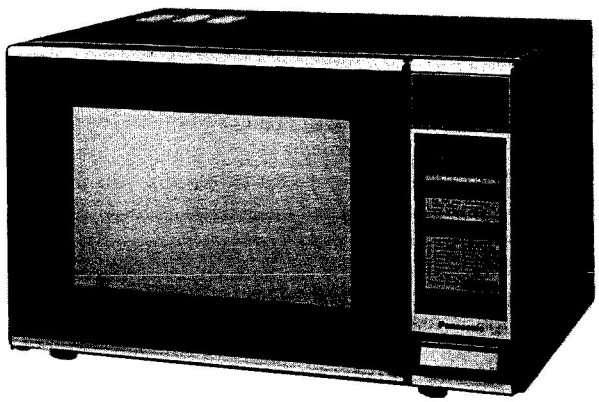
ORDER NO. MOD85040498C1

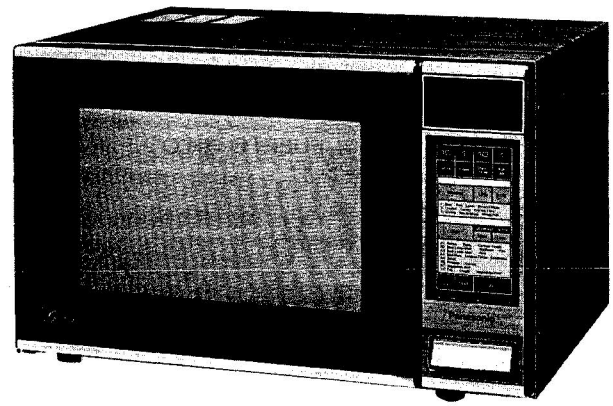
Service Manual

Microwave Oven

NE-8070, NE-8070C
NE-7970, NE-7970C



NE-8070, NE-8070C



NE-7970, NE-7970C

NE-8070, NE-7970 for U.S.A.
NE-8070C, NE-7970C for Canada

Specifications

Power Source :	120 V AC Single Phase 60 Hz
Power Requirement :	1,420 W : (12.4 A)
Output :	700 W : Full Power
Oscillation Frequency :	2,450 MHz
Magnetron :	2M204-M1/(2M107A-209)
Timer :	99 min. 99 sec./9 hr. 99 min.
Outside Dimensions :	24" (W) × 18" (D) × 14-3/4" (H) 607 mm (W) × 458 mm (D) × 375 mm (H)
Oven Cavity Dimensions :	15-9/16" (W) × 15-9/16" (D) × 10" (H) 395 mm (W) × 395 mm (D) × 249 mm (H)
Weight :	48 lbs (22.0 kg)
Specifications subject to change without notice.	

Panasonic®

Matsushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus. New Jersey 07094

Panasonic Hawaii Inc.
91-238 Kauhi St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

Copyright© 1985 by Matsushita Electric Corporation of America, All rights reserved.

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with :
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): NE-8070 and NE-7970 or "Radiation Emitting Devices Act" (NHW) : NE-8070C and NE-7970C.
   It is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage after every servicing according to the "Procedure for measuring radiation leakage"on page 35.
4. Any serviceman who learns of any accident pertaining to microwave radiation leakage should immediately notify the appropriate address listed below.

IN U.S.A. (MESCO)	Matsushita Engineering and Service Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention : Engineering Support Division. (201) 348-7000
IN HAWAII (PHI)	PANASONIC HAWAII, INC. 91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808-0774 (808) 682-2851
IN PUERTO RICO (PSC)	PANASONIC SALES COMPANY, Division of Matsushita Electric of Puerto Rico, Inc. Ave. 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630 (809) 769-4320
IN CANADA (MELCA)	Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 (416) 624-5010

5. There are special components used in the microwave oven which are important for safety. These parts are shaded on the schematic diagram and marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.

(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches
   (5) Evidence of dropping or abuse

(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.

(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

CONTENTS

(page)

OPERATING INSTRUCTIONS 4
For NE-8070, NE-8070C 4
For NE-7970, NE-7970C 14
SCHEMATIC DIAGRAM (NE-8070, NE-7970) 22
SCHEMATIC DIAGRAM (NE-8070C, NE-7970C) 23
WIRING DIAGRAM (NE-8070, NE-7970) 24
WIRING DIAGRAM (NE-8070C, NE-7970C) 25
DESCRIPTION OF OPERATING SEQUENCE 26
AUTO SENSOR EXPLANATION,
K FACTORS AND POWER LEVELS 27
CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING 29
DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE 30
COMPONENT TEST PROCEDURE 32
MEASUREMENTS AND ADJUSTMENTS 34
PROCEDURE FOR MEASURING RADIATION LEAKAGE 35
TROUBLESHOOTING GUIDE 36
DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE 42
EXPLODED VIEW AND PARTS LIST 45

This service manual covers technical descriptions and parts list of models NE-8070, NE-8070C, NE-7970 and NE-7970C. Please refer to parts list for the differences of applicable parts.
Models NE-8070/NE-8070C and NE-7970/NE-7970C are identical except NE-8070/NE-8070C have Auto Sensor Cook, Auto Sensor Cook-Warm, Auto Sensor Frozen-Cook and Auto Sensor Frozen-Cook-Warm feature while NE-7970/NE-7970C have Auto Sensor Cook feature only.
Reference to unique operating features of applicable model will be refered to in this service manual.

Location of nameplate

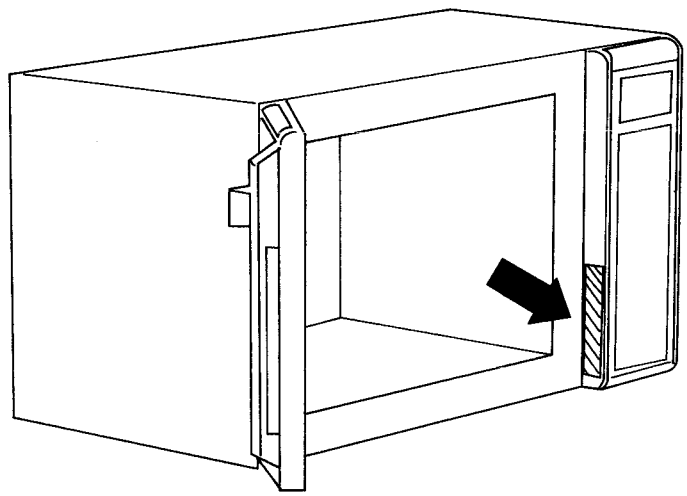


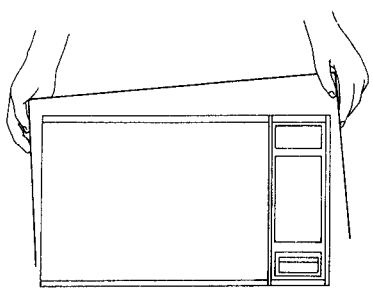
Fig. A

The nameplate is located at lower frame of the escutcheon base as illustrated in Fig. A.
The model and serial numbers will be found on this nameplate.

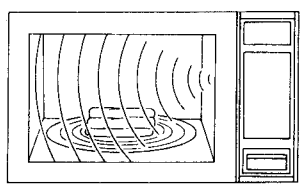
Safety Statements

General Use

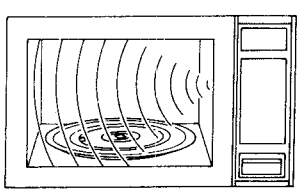
1. Do NOT tamper with or make any adjustments or repairs to door, control panel housing, safety interlocks switches or any other part of the oven. Do NOT remove outer panel from oven. Repairs should only be done by a qualified service person.
2. Do NOT operate the oven empty. The microwave energy will reflect continuously throughout the oven if no food or water is present to absorb energy.
3. If a fire occurs in the oven, touch the Stop Pad and LEAVE DOOR CLOSED. Disconnect the power cord, or shut off power at the fuse or circuit breaker panel.
4. Do NOT dry clothes, newspapers or other materials in oven. They may catch on fire.
5. Do NOT use recycled paper products, as they may contain impurities which may cause sparks and/or fires when used.
6. Do NOT use newspapers or paper bags for cooking.
7. Do NOT hit or strike control panel. Damage to controls may occur.
8. POT HOLDERS may be needed when cooking. Heat is transferred from the hot food to the cooking container.
9. Do NOT store flammable materials next to, on top, or in the oven. It could be a fire hazard.
10. Do NOT use the oven without the glass tray and roller ring in place.



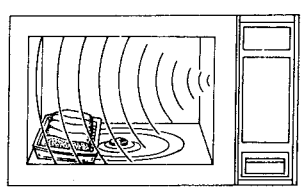
Do NOT remove outer panel from oven.



Do NOT dry clothes or newspapers.



Do NOT operate the oven empty.

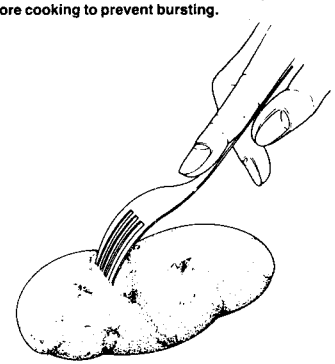


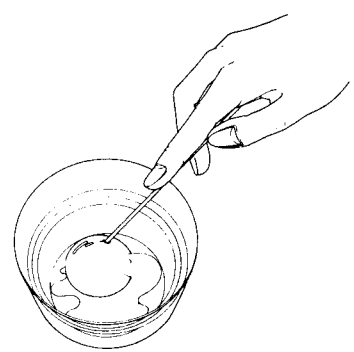
Do NOT use the oven without the glass tray and roller ring in place.

Food

1. Never use your microwave oven for HOME CANNING. The oven is not designed to permit proper canning. Improperly canned food may spoil and be dangerous to consume.
   Leave canning to the proven methods of water bath or pressure canner. (See your cookbook for further information.)
2. COOKING TIMES given in the cookbook are APPROXIMATE. Factors that may affect cooking are: starting temperature, altitude, volume, size and shape of foods and utensils used. As you become familiar with the oven, you will be able to adjust for these factors.
3. It is better to UNDERCOOK RATHER THAN OVERCOOK foods. If food is undercooked, it can always be returned to the oven for further cooking. If food is overcooked, nothing can be done. Always start with minimum cooking times.
4. SMALL QUANTITIES of food or foods with LOW MOISTURE content can burn, dry out or catch on fire if cooked too long. If a fire occurs, touch the Stop Pad and leave oven door closed.
5. Do NOT boil eggs in their shell. Pressure may build up and the eggs will explode.
6. Potatoes, apples, egg yolks, whole acorn squash, sausage are examples of food with NONPOROUS SKINS. These must be pierced before cooking to prevent bursting. (See the illustrations below.)
7. POPCORN must be popped in a microwave corn popper. A microwave corn popper is available through Panasonic dealers, model number 18450. In addition, special microwave popcorn is available in some areas of the country. This popcorn pops in its own package and does not require a microwave corn popper. It may be used in this oven.
8. Do NOT attempt to deep fat fry in your oven.
9. Use MEAT THERMOMETER to check doneness of roasts and poultry. If undercooked, return to oven and cook a few more minutes at the recommended power level. DO NOT USE A CONVENTIONAL MEAT THERMOMETER IN THE MICROWAVE OVEN.
10. HEATED LIQUIDS CAN ERUPT if not mixed with air. Do not heat liquids in your microwave oven without first stirring.
11. Use fresh potatoes for baking, and cook until just done. The potatoes will still feel firm to the touch, but are easily pierced with a fork. Overcooking causes dehydration and may cause a fire.

Foods with NONPOROUS SKINS must be pierced before cooking to prevent bursting.





– 5 – ◄ Page of Operating Instructions ► – 6 –

Utensils

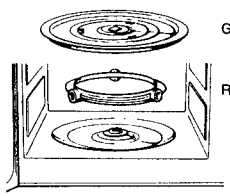
1. MICROWAVE BROWNING DISHES or GRILLS are designed for microwave cooking only. Preheating times vary depending on the size of the browning dish and food being cooked. Always follow instructions provided by the browning dish or grill manufacturer. DO NOT PREHEAT BROWNING DISH ON THE GLASS TRAY MORE THAN 8 MINUTES.
2. METAL CONTAINERS or dishes with metallic rims should not be used. Arcing may occur.
3. METAL TWIST-TIES may not be used in the microwave oven.
4. Do NOT use SEALED JARS or NARROW NECK bottles for cooking or reheating. They may shatter.
5. Do NOT use CONVENTIONAL THERMOMETERS in the microwave oven. They may cause arcing.
6. Remove PLASTIC STORE WRAPS, before cooking or defrosting in the oven.
7. When using foil, skewers, warming rack or utensils made of metal in the oven allow at least one inch of space between metal material and interior oven walls. If arcing (sparking) occurs remove metal material (skewers, etc.) and/or transfer to a non-metallic container.
8. For FURTHER INFORMATION on proper cooking utensils, refer to the Introduction in the Microwave cookbook.

Roller Ring

1. The ROLLER RING and oven floor should be cleaned frequently to prevent excessive noise.
2. The ROLLER RING MUST ALWAYS be used for cooking together with the Glass Tray.

Glass Tray

1. Do NOT operate the oven without the Glass Tray in place.
2. Do NOT use any other Glass Tray with this oven.
3. If Glass Tray is hot, ALLOW TO COOL before cleaning or placing it in water.
4. Do NOT cook directly on the Glass Tray.



Automatic Checking Mechanism

"FFFF" Display in Window:

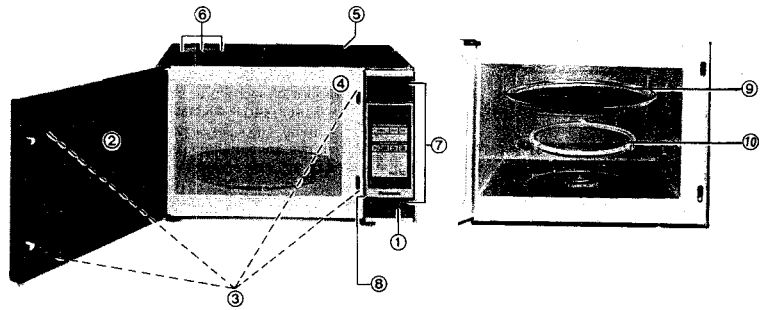
If "FFFF" appears in display window remove the plug from the AC wall outlet, wait 10 seconds and then plug the oven in again.

- If the "FFFF" indication clears, simply reset the time of day and use the oven.
- If the "FFFF" still appears, please contact the nearest MESCO authorized Servicenter.

Power Failure, etc.:

When the oven is not being used for cooking, the time of day will appear in the display window.
If the oven is affected by a temporary power failure or the plug is removed from electric outlet and then reinserted, the colon in the display window will blink. To reset correct time of day, simply follow the clock set instructions. (See page 9.)

Feature Diagram



① **Door Release Button**
Push door button to open door.

② **Oven Window**

③ **Door Safety Lock System**
Before any cooking function can begin, oven door must be securely shut.

④ **Oven Light**
Will turn on whenever the door is opened or during cooking.

⑤ **Oven Light Cover**
Allows easy access to replace oven light.
See page 22.

⑥ **Oven Air Vents**
Never block air vents during cooking.

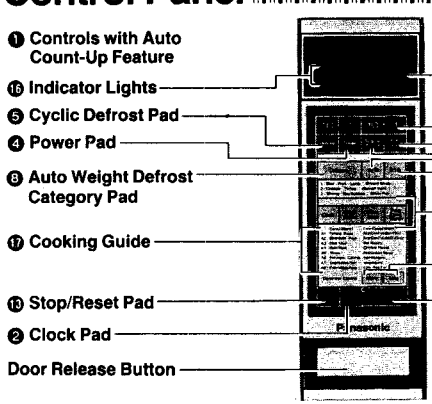
⑦ **Control Panel**

⑧ **Name Plate**
Contains model and serial number of your oven.

⑨ **Glass Tray**
Must be placed in the oven before cooking.

⑩ **Roller Ring**
Must be placed in the oven before cooking.

Control Panel



❶ Controls with Auto Count-Up Feature
⓰ Indicator Lights
❺ Cyclic Defrost Pad
❹ Power Pad
❽ Auto Weight Defrost Category Pad
⓱ Cooking Guide
⓭ Stop/Reset Pad
❷ Clock Pad
Door Release Button

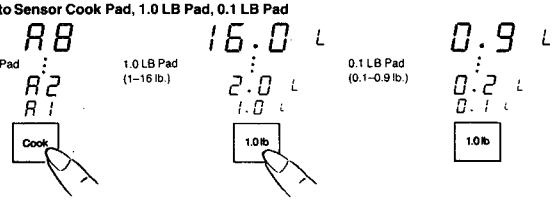
⓯ Display Window
❸ Time Pads
❼ Auto Start Pad
❻ Stand/Timer Pad
❾ 1.0 lb Pad
❿ 0.1 lb Pad
⓫ Auto Sensor Control Pads:
Cook Pad
Cook-Warm Pad
Froz-Cook Pad
Froz-Cook-Warm Pad
⓬ Doneness Control Pads:
More Pad
Less Pad
⓮ Start Pad

Controls

❶ Auto Count Up:

The Time, Power, Auto Weight Defrost Category, 1.0 LB, 0.1 LB and Auto Sensor Control Pads are all equipped with the Auto Count Up feature. By holding your finger on the pad, the readout in the display window will count up.
After reaching the maximum function, the display will return to the starting point and continue to count up. To stop the readout simply remove your finger from the pad.
Note: When programming the oven, hold your finger firmly in the center of the pad.

Example: Auto Sensor Cook Pad, 1.0 LB Pad, 0.1 LB Pad



❷ Clock Pad:

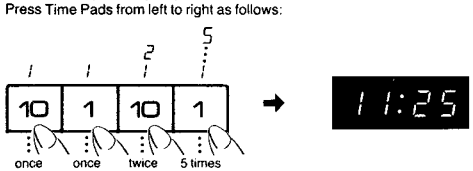
When oven is first plugged in, the colon in the display window will blink.

Clock

To set clock

Step 1. Enter time of day by pressing appropriate Time Pads.
▶Time appears in display window; colon is blinking.

Example: To set 11:25 (a.m. or p.m.)
Press Time Pads from left to right as follows:



Step 2. Touch Clock Pad.
▶Colon stops blinking; time of day is entered and locked into display.

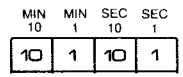
NOTES ON SETTING THE CLOCK:

1. Clock must be set before oven will operate.
2. To reset time of day touch Clock Pad twice to clear the time. Colon will begin to blink. Enter the correct time of day by following the above procedures.
3. The clock will keep the time of day as long as oven is plugged in and electricity is supplied.

❸ Time Pads:

1. Basic Time Setting ---All powers except LOW

The Pads serve as a 10 minute pad, 1 minute pad, 10 second pad and 1 second pad from the left, and can be programmed up to 99 minutes 99 seconds.

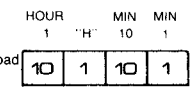


Example 1: To set 13 minutes 45 seconds
Touch;
10 MIN Pad: once
1 MIN Pad: 3 times
10 SEC Pad: 4 times
1 SEC Pad: 5 times

Example 2: To set 30 seconds
Touch;
10 SEC Pad: 3 times

2. LOW power

The Pads serve as a 1 hour pad, an inoperable pad, 10 minute pad and 1 minute pad from the left, and can be programmed up to 9 hours 99 minutes.



Example 1: To set 2 hours 25 minutes
Touch;
1 HOUR Pad: twice
10 MIN Pad: twice
1 MIN Pad: 5 times

Example 2: To set 45 minutes
Touch;
10 MIN Pad: 4 times
1 MIN Pad: 5 times

Note: When LOW is programmed for 1 hour or longer, the time in the display window counts down minute by minute. When less than 59 minutes (59 00) remain, the time counts down second by second.

❹ Power Pad:

Automatically counts down from High to Warm. The following is the approximate wattage for each power level.

Power

HIGH power	(700 watts/Full power)	M. LOW power	(360 watts/50% power)
M. HIGH power	(650 watts/90% power)	LOW power	(200 watts/30% power)
MEDIUM power	(490 watts/70% power)	WARM power	(70 watts/10% power)

❺ Cyclic Defrost Pad:

When DEFROST is selected, the automatic cycle divides the defrosting time into 8 periods which alternate between defrost and stand. The wattage of DEFROST power is approximately 245 watts/35% power.

Defrost

Note: When oven is operating at DEFROST power, Cyclic Defrost indicator light blinks. The light remains on, but does not blink during built-in stand time.

❻ Stand/Timer Pad:
This features allows you to program a Stand Time after cooking is complete. This pad can also be used to program the oven as a minute timer.

Stand/ Timer

❼ Auto Start Pad:
Allows you to program the time of day you want cooking to start.

Auto Start

Note: Auto Start cannot be programmed before Auto Sensor Cooking, Auto Weight Defrost or Cyclic Defrost. This is to prevent the starting temperature of the food from rising before cooking or defrosting begins. A change in the starting temperature could cause inaccurate results.

❽ Auto Weight Defrost Pad:
This feature allows you to defrost meat, poultry or seafood by weight. Choose a defrosting category and program the weight of the food. Weight must be programmed in pounds and tenths of a pound. For further information on Auto Weight Defrost refer to Introduction in the Microwave Cookbook.
Press this pad to select the appropriate defrosting category 1 through 3. Listed below are the recommended foods and maximum weight limits for each category.

Category

Category	Food	Maximum Weight
1	Ground Meats, Roasts, Ribs, Stew Meat, Chops, Steaks, Frankfurters	8 lb.
2	Whole or Split Cornish Hens, Whole or Cut-Up Chicken, Whole Turkey, Turkey breast	16 lb.
3	Shrimp (medium), Sea Scallops, Whole Fish	3 lb.

Note: The shape and size of the meat will determine the maximum weight the oven can accommodate.

❾ 1.0 LB Pad:
Press this pad to program the weight of your food by whole pounds.

1.0 lb

❿ 0.1 LB Pad:
Press this pad to program with weight of your food by tenths of a pound. To convert ounces into tenths of a pound, see conversion chart in the Introduction of the Microwave Cookbook.

0.1 lb

⓫ Auto Sensor Control Pads:
Press desired control pad designated for your food.
The appropriate food categories for each Auto Sensor Cycle are as follows. For further information, refer to Introduction and Auto Sensor recipes in Cookbook.

Cycle Number	Foods for Cook (-Warm) Cycle	Foods for Froz-Cook (-Warm) Cycle
A1	Canned Foods, Frankfurters Leftovers, Noodles	Frozen Convenience Foods I
A2	Beef (Well), Lamb (Well), Meatloaf, Pork, Whole Poultry	Frozen Convenience Foods II
A3	Beef (Med), Lamb (Med), Rice	Frozen Pot Roast
A4	Beef (Rare), Poultry Pieces, Casseroles	Frozen Poultry Pieces
A5	Stews	Frozen Precooked Casseroles and Stews, Chops
A6	Potatoes, Carrots	Frozen Hamburgers
A7	Beans, Cauliflower, Peas	Frozen Vegetables
A8	Fish, Chops, Broccoli	Frozen Seafood, Whole Fish

Cook Pad:
For cooking foods from their natural storage places; meats, vegetables, casseroles, cakes, etc.

Cook

Cook-Warm Pad:
For cooking foods from their natural storage place, and keeping warm for 1 hour. (If foods are removed at end of the cook stage, allow to stand according to recipe directions.)

Cook Warm

Froz-Cook Pad:
For cooking foods from the frozen state; convenience foods, casseroles, etc.

Froz Cook

Froz-Cook-Warm Pad:
A complete cycle to cook foods from frozen state, and keep them warm for 1 hour. (If foods are removed at end of the cook stage, allow to stand according to recipe directions.)

Froz Cook Warm

⓬ Doneness Control Pads:
Preferences for food doneness vary with each individual. After having used the Auto Sensor Cycles a few times, you may decide you would prefer your food cooked to a different doneness. By using the Doneness Control, the Auto Sensor programs can be adjusted to cook food for a longer or shorter time.

Note: If you are satisfied with the result of cooking with the built-in Auto Sensor program, you do not need to use these pads.

More Pad:
Use when you want your food to be cooked a little more than the built-in auto program.

More

Less Pad:
Use when you want your food to be cooked a little less than the built-in auto program.

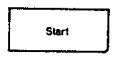
Less

⓭ Stop/Reset Pad:
Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day appears in display window.

Stop/ Reset

⓮ Start Pad:

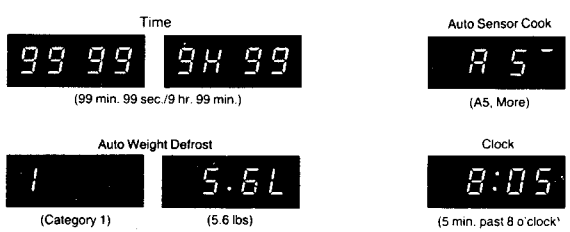
One tap allows oven to begin functioning. If door is opened or Stop/Reset Pad is tapped once during oven operation, Start Pad must again be touched to restart oven.



⓯ Display Window:

Displays cooking time, weight defrost category and weight, Auto Sensor Cycle, doneness symbol and clock before or after cooking.

Digital Readout Display:



⓰ Indicator Lights:

An indicator light will turn on when a specific power level and/or the following functions are selected: Auto Sensor Cooking, Auto Weight Defrost, Cyclic Defrost, Auto Start and Stand.

Function	Indicator Light	Function	Indicator Lights
Auto Sensor Cook	COOK	Cyclic Defrost	T. DEF
Cook-Warm	COOK WARM	Auto Start	A. START
Froz-Cook	FROZ COOK	Stand	STAND
Froz-Cook-Warm	FROZ COOK WARM	Power Levels	HIGH, M.HIGH,
Auto Weight Defrost	W. DEF		MED, M.LOW,
			LOW, WARM

Note: When Timer is selected no indicator light will turn on.

⓱ Cooking Guide:

Easy reference for Auto Sensor Cooking.

Other Functions:

Opening Door

Opening the door during cooking will stop the cooking process without canceling the program. Cooking resumes as soon as the door is closed and Start Pad is touched. The oven light will stay on or turn on whenever the door is opened.

Beep Sound:

When a pad is touched correctly a beep will be heard. If a pad is touched and no beep is heard, the unit has not or cannot accept the instruction. The oven will beep twice between programmed stages. At the end of any complete program, the oven will beep 5 times.

Auto Sensor Cooking

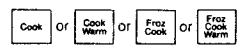
Auto Sensor Cooking allows you to cook most of your favorite foods without having to select cooking times and powers. The oven does it all automatically.

For proper cooking results on Auto Sensor Cycles, be sure to cover foods securely with plastic wrap such as Saran Wrap (by Dow Chemical Co.,) or place foods in a glass casserole with a proper fitting lid.

For further information refer to the Introduction in the Cookbook and Auto Sensor recipes.

Step 1

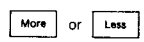
Press the appropriate Auto Sensor Control Pad until the desired Auto Cycle number (A1–A8) appears in display window.



▶Clock time disappears. The selected Auto Sensor Cycle number appears in display window. The Auto Sensor status indicator lights also appear in display window.

If Desired

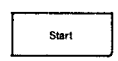
Touch More Pad or Less Pad for the doneness of your food.



▶Selected doneness symbol appears in display window.
Note: Doneness Control can not be used with Cook (-Warm) A1.

Step 2

Touch Start Pad.



After Oven Starts:

▶Microwave activity starts. The Auto status indicator light for the first operating stage starts to blink and other Auto status indicator light remains on. The turntable rotates. Oven light turns on.
▶Oven will operate automatically according to the selected Auto Sensor Cycle.

Cook Cycle

▶WHEN AUTO SENSOR CYCLE (A2 THROUGH A8) DISAPPEARS FROM DISPLAY WINDOW, two beeps sound. The remaining cooking time appears in display window in minutes and seconds and begins to count down. COOK status indicator light continues to blink. (If doneness selection was made, its symbol disappears.)
Note: When using Cook A1 the time will not appear in the display window. The cooking cycle is complete. COOK status indicator light stops blinking, and oven beeps 5 times.
▶WHEN AUTO SENSOR COOK CYCLE IS COMPLETED, the oven beeps 5 times and shuts off. Indicator and oven lights turn off. The turntable stops rotating. The time of day reappears in display window.

Cook-Warm Cycle

▶WHEN AUTO SENSOR CYCLE (A2 THROUGH A8) DISAPPEARS FROM WINDOW, two beeps sound. The remaining cooking time appears in display window in minutes and seconds and begins to count down. COOK status indicator light continues to blink. (If doneness selection was made, its symbol disappears.)

▶WHEN THE COOKING TIME IS OVER, two beeps sound and warm time (60 minutes) will appear in display window and begins to count down. COOK status indicator light turns off, and the WARM status indicator light begins to blink.

Note: On Cook-Warm A1, when A1 disappears from display window, two beeps sound and warm time (60 minutes) will appear in display window and begins to count down.

▶WHEN AUTO SENSOR COOK-WARM CYCLE IS COMPLETED, indicator and oven lights turn off, the oven beeps 5 times and shuts off. The turntable stops rotating. The time of day reappears in display window.

Froz-Cook Cycle

▶WHEN AUTO SENSOR CYCLE (A1 THROUGH A8) DISAPPEARS FROM DISPLAY WINDOW, two beeps sound. The remaining cooking time appears in display window in minutes and seconds and begins to count down. The FROZ status indicator light turns off while the COOK status indicator light begins to blink. (If doneness selection was made, its symbol disappears.)

▶WHEN AUTO SENSOR FROZ-COOK CYCLE IS COMPLETED, indicator and oven lights turn off, the oven beeps 5 times and shuts off. The turntable stops rotating. The time of day reappears in display window.

Froz-Cook-Warm Cycle

▶WHEN AUTO SENSOR CYCLE (A1 THROUGH A8) DISAPPEARS FROM DISPLAY WINDOW, two beeps sound. The remaining time appears in display window in minutes and seconds and begins to count down. FROZ status indicator light turns off while COOK status indicator light begins to blink. (If doneness selection was made, its symbol disappears.)

▶WHEN COOKING TIME IS OVER, two beeps sound and warm time (60 minutes) will appear in display window and begins to count down. COOK status indicator light turns off, and WARM status indicator light begins to blink.

▶WHEN AUTO SENSOR FROZ-COOK-WARM CYCLE IS COMPLETED, indicator lights and oven lights turn off, the oven beeps 5 times and shuts off. The turntable stops rotating. The time of day reappears in display window.

Auto Sensor Cooking

The Auto Sensor system works by detecting a build-up of steam on the humidity sensor. As foods cook in a microwave, steam is produced. When foods are covered, the steam will build up and escape from the dish in a burst. This burst of steam is detected by the humidity sensor and then the oven automatically calculates the remaining cooking time.

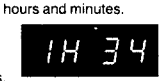
When an Auto Sensor Cycle is selected A1 through A8 will appear in the display window. The oven door should not be opened for longer than one minute when A1 through A8 appears in the display window. Opening the door may cause inaccurate cooking results. Once the steam is detected, the remaining cooking time immediately appears in the display window and begins to count down. At this time, the oven door may be opened, to stir, turn or add foods.

NOTES ON AUTO SENSOR COOKING:

1. Important
   - Auto Sensor Cooking is successful with the foods and recipes found in the Genius Cookbook and marked with the Symbol [A]. Because of the vast differences in food composition, recipes and charts without the Auto Sensor symbol should be prepared in your microwave oven using the Power and Time features.
   - When cooking by Auto Sensor, the oven door should not be opened for longer than 1 minute while A1–A8 is in display window. Opening the door for longer than 1 minute may cause inaccurate cooking results. Once time appears in display window, the door may be opened and foods can be stirred or turned.
   - All foods for Auto Sensor Cooking on Cook or Cook-Warm Cycle are taken from their normal storage place.
   - All foods for Auto Sensor Cooking on Froz-Cook and Froz-Cook-Warm Cycle should be solidly frozen.
   - Before using Auto Sensor feature, make sure glass tray in the oven is dry to assure best Auto Cooking results.
   - Room temperature of heat surrounding the oven should not be above 95°F when using Auto Sensor Cooking feature. Inaccurate cooking may result.
   - Foods less than 3 or 4 ounces should be cooked by power and time, not by the Auto Sensor Cooking Cycle.
   - When selecting Auto Sensor Froz-Cook (-Warm) Cycle for frozen food, do not expect foods to be completely defrosted after the Frozen Cycle. This is a total cycle and foods should not removed until the end of the Cook cycle. For defrosting foods only use Defrost Pad and Time or Auto Weight Defrost.
2. Doneness Control function may be used when you want your food to be cooked longer or shorter time than the built-in Auto Sensor Cycles.
3. The appropriate food categories for each Auto Sensor Cycle are as follows. For further information, refer to Introduction and Auto Sensor recipes in Cookbook.

Cycle Number	Foods for Cook (-Warm)Cycle	Foods for Froz-Cook (-Warm) Cycle
A1	Canned Foods, Frankfurters Leftovers, Noodles	Frozen Convenience Foods I
A2	Beef (Well), Lamb (Well), Meatloaf, Pork, Whole Poultry	Frozen Convenience Foods II
A3	Beef (Med), Lamb (Med), Rice	Frozen Pot Roast
A4	Beef (Rare), Poultry Pieces, Casseroles	Frozen Poultry Pieces
A5	Stews	Frozen Precooked Casseroles and Stews, Chops
A6	Potatoes, Carrots	Frozen Hamburgers
A7	Beans, Cauliflower, Peas	Frozen Vegetables
A8	Fish, Chops, Broccoli	Frozen Seafood, Whole Fish

4. Foods may be removed at any time during the warm time. If food is removed at the end of the Cook Cycle, allow to stand according to recipe directions.
5. You may program desired power and/or stand up to 2 stages after Auto Sensor program.
6. When the remaining cooking time is over 60 minutes, the time will appear as hours and minutes.
   Example: If the cooking time is 94 minutes, display window will show 1H34.
   The seconds will not visibly count down in display window until 59 minutes remain.
   The time in display window will then show in minutes and seconds, and count down in seconds.



7. Examples of display for Auto Sensor Cooking are:

(Froz-Cook Cycle, A5)

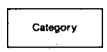
(Cook Cycle, A2, More)

(Cook-Warm Cycle, A8, Less)

Auto Weight Defrost

Step 1

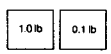
Press Auto Weight Defrost Category Pad to select Defrost Category 1 through 3



▶Clock time disappears. The selected category number appears in the display window. Auto Weight Defrost indicator light turns on.

Step 2

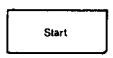
Set the weight of your meat by pressing 1.0 (lb) Pad and/or 0.1 (lb) Pad.



▶Category number disappears and the weight selected appears in the display window.

Step 3

Touch Start Pad.



After Oven Starts:

▶MICROWAVE DEFROSTING BEGINS. Turntable rotates. Oven light turns on. Auto Weight Defrost indicator light begins to blink. Weight in display disappears. Defrosting time appears and counts down second by second.
▶WHEN DEFROSTING IS COMPLETED, oven beeps five times and shuts off. Turntable stops. The indicator light and oven light turn off. Time of day appears in display window.

NOTES ON AUTO WEIGHT DEFROST:

1. Categories for Auto Weight Defrost are:

Category	Food	Maximum Weight
1	Ground Meats, Roasts, Ribs, Stew Meat, Chops, Steaks, Frankfurters	8 lb.
2	Whole or Split Cornish Hens, Whole or Cut-Up Chicken, Whole Turkey, Turkey breast	16 lb.
3	Shrimp (medium), Sea Scallops, Whole Fish	3 lb.

2. Stand time or power and time cooking may be programmed after Auto Weight Defrost.
3. Auto Start can not be programmed before Auto Weight Defrost.
4. For further information on Auto Weight Defrost refer to introduction in Microwave Cookbook.

Note: The shape and size of the meat will determine the maximum weight the oven can accommodate.

Time Cooking

Cyclic Defrost

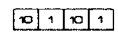
Step 1

Touch Cyclic Defrost Pad.

▶Clock time disappears. Cyclic Defrost indicator light turns on.

Step 2

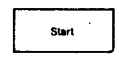
Set defrost time by pressing Time Pads.



▶Defrost time appears in display window in minutes and seconds.

Step 3

Touch Start Pad.



After Oven Starts:

▶MICROWAVE DEFROSTING BEGINS. Turntable rotates. Oven light turns on. Cyclic Defrost indicator light begins to alternately blink and glow. Defrosting time counts down second by second.
▶WHEN DEFROSTING IS COMPLETED, oven beeps five times and shuts off. Turntable stops rotating. Cyclic Defrost light and oven light turn off. Time of day appears in display window.

One Stage Cooking

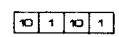
Step 1

Select cooking power by pressing Power Pad.

▶Clock time disappears. Selected power indicator light turns on.

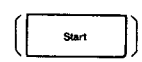
Step 2

Set cooking time by pressing Time Pads.



▶Cooking time appears in display window in minutes and seconds.

[Step 3 Touch Start Pad.]



OR

Two Stage Cooking

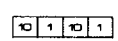
Step 3

Before touching Start Pad, select second cooking power by pressing Power Pad.

▶Previously selected time and power indicator light disappear from display window. Second stage power indicator light turns on.

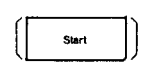
Step 4

Set second stage cooking time by pressing Time Pads.



▶Second stage cooking time appears in display window.

[Step 5 Touch Start Pad.]



OR

Three Stage Cooking

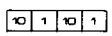
Step 5

Before touching Start Pad, select third stage cooking power by pressing Power Pad.

►Previously selected time and power indicator light disappear from display window. Third stage power indicator light turns on.

Step 6

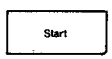
Set third stage cooking time by pressing Time Pads.



►Third stage cooking time appears in display window.

Step 7

Touch Start Pad.

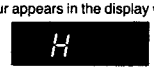


After Oven Starts:

►MICROWAVE COOKING BEGINS. Turntable rotates. Oven light turns on. Third stage cooking time disappears and first stage cooking time reappears in the display window and begins to count down. First stage power indicator light turns on and starts to blink. Second stage power indicator light turns on. Third stage power indicator light remains on.
►WHEN THE FIRST STAGE COOKING TIME HAS ELAPSED, a beep sounds twice. Second stage cooking time reappears in the display window and begins to count down. First stage power indicator light turns off. Second stage power indicator light starts to blink. Third stage power indicator light remains on.
►WHEN THE SECOND STAGE COOKING TIME HAS ELAPSED, a beep sounds twice. Third stage cooking time reappears in the display window and begins to count down.
Second stage power indicator light turns off. Third stage power indicator light starts to blink.
►WHEN THE THIRD STAGE COOKING TIME HAS ELAPSED, five beeps are heard and oven turns off. Third stage power indicator light turns off. Oven light turns off and turntable stops rotating. Time of day reappears in the display window.

NOTES ON TIME AND POWER COOKING:

1. When LOW power is programmed "H" meaning Hour appears in the display window. Cooking time can only be programmed in hours and minutes.



2. When LOW power is programmed for 1 hour or longer, the time will count down minute by minute. When less than 59 minutes (59 00) remain, the time will count down second by second.
3. Examples of 2 and 3 stage programmed cooking are:

First Stage	Second Stage	Third Stage
HIGH, 8 minutes	→ Stand, 3 minutes	
HIGH, 9 minutes	→ MEDIUM-LOW, 20 minutes	
Auto Start	→ MEDIUM, 24 minutes	→ WARM, 15 minutes
HIGH, 10 minutes	→ MEDIUM, 20 minutes	→ Stand, 5 minutes
Auto Start	→ HIGH, 10 minutes	→ LOW, 50 minutes

Special Controls

Auto Start

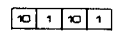
Step 1

Touch Auto Start Pad.

►Clock time disappears from display window. Auto Start indicator light turns on, and colon (:) stays on.

Step 2

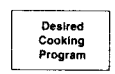
Set the time of day you want the oven to begin cooking by pressing Time Pads.



►Selected start time appears in display window.

Step 3

Program desired cooking according to directions already given in this manual.



►Start time with colon and Auto Start indicator light disappear. Selected program and indicator lights appear in display window.

Step 4

Touch Start Pad.

After Oven Starts:

►NO COOKING ACTIVITY BEGINS. Turntable does not rotate. Oven light does not turn on. Selected program and indicator lights disappear. Current day time appears, Auto Start indicator light turns on and colon starts to blink.
►WHEN SELECTED START TIME APPEARS IN THE DISPLAY WINDOW, oven beeps twice and enters into previously selected cooking function. Oven light turns on and turntable begins to rotate. Auto Start indicator light and colon turn off while next stage indicator lights begin to blink.
►WHEN COOKING IS COMPLETED, oven beeps five times and shuts off.
Turntable stops rotating, oven light and indicator lights turn off, and time of day appears in display window.

NOTES ON AUTO START:

1. With the Auto Start feature, the oven may be programmed to start cooking up to 11 hours and 59 minutes before cooking starts.
2. Before cooking, to recall selected start time, press Auto Start Pad. Start time will appear in display window while your finger is touching the pad.
3. Only one or two stage cooking can be programmed after Auto Start.
4. Auto Start cannot be programmed before Auto Sensor Cooking, Auto Weight Defrost, or Cyclic Defrost. This is to prevent the starting temperature of the food from rising before cooking or defrosting begins. A change in the starting temperature could cause inaccurate results.

Timer

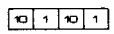
Step 1

Touch Stand/Timer Pad.

►Clock time disappears from display window. No indicator lights turn on.

Step 2

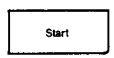
Set desired amount of time by pressing Time Pads.



►Selected amount of time appears in display window.
(A maximum of 99 minutes and 99 seconds may be programmed once.)

Step 3

Touch Start Pad.



After Oven Starts:

►NO COOKING ACTIVITY BEGINS. Turntable does not rotate. Oven light does not turn on. Only the time displayed starts to count down.

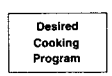
►WHEN PROGRAMMED TIME HAS ELAPSED, oven beeps five times. Time of day appears in display window.

Note: If oven door is opened during the timer function, the time in the display window will continue to count down. When using the Timer, an indicator light will not go on in the display window.

Stand Time

Step 1

Program desired cooking program according to directions already given in this manual.



►Selected program and indicator light appear in display window.

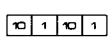
Step 2

Touch Stand/Timer Pad.

►Previously selected program and indicator lights disappear. Stand indicator light turns on.

Step 3

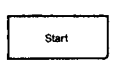
Set desired amount of time by pressing Time Pads.



►Stand time appears in display window.
(A maximum of 99 minutes and 99 seconds may be programmed twice.)

Step 4

Touch Start Pad.



After Oven Starts:

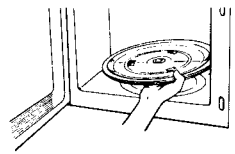
►MICROWAVE ACTIVITY BEGINS. Turntable rotates. Oven light turns on. Previously selected program appears in display window, and indicator light blinks.

►WHEN MICROWAVE PROGRAM is completed, turntable stops, oven beeps twice, and standing time counts down. Stand indicator light turns on while oven light turns off.

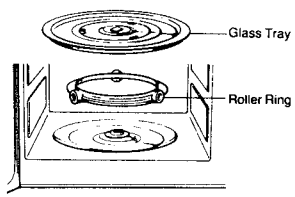
►AT END OF STAND TIME, oven beeps five times and shuts off. Stand indicator light turns off. Time of day appears in display window.

Care of Your Microwave Oven

1. Turn the oven off before cleaning.
2. Keep the inside of the oven clean. When food spatters or spilled liquids adhere to oven walls, wipe with a damp cloth. Mild detergent may be used if the oven gets very dirty. The use of harsh detergent or abrasives is not recommended.
3. The outside oven surface should be cleaned with soap and water, rinsed and dried with a soft cloth. To prevent damage to the operating parts inside the oven, water should not be allowed to seep into the ventilation openings.
4. If the Control Panel becomes wet, clean with a soft, dry cloth. Do not use harsh detergents or abrasives on Control Panel.
   When cleaning the Control Panel, leave oven door open to prevent oven from accidentally turning on. After cleaning touch Stop/Reset Pad to clear display window.
5. If steam accumulates inside or around the outside of the oven door, wipe with a soft cloth. This may occur when the microwave oven is operated under high humidity conditions and in no way indicates malfunction of the unit.
6. It is occasionally necessary to remove the glass tray for cleaning. Wash the tray in warm sudsy water or in a dishwasher.



7. The roller ring and oven cavity floor should be cleaned regularly to avoid excessive noise. Simply wipe the bottom surface of the oven with mild detergent water or window cleaner and dry. The roller ring may be washed in mild sudsy water or dishwasher. Cooking vapors collect during repeated use but in no way affect the bottom surface or roller ring wheels.
   When removing the roller ring from cavity floor for cleaning, be sure to replace in the proper position.



Replacement of Oven Light

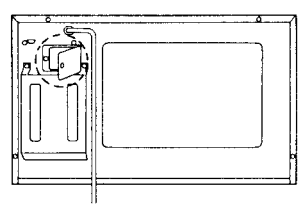
When it becomes necessary to replace the oven light, you can replace it yourself. Please follow the directions below carefully.

Step 1. Turn off the oven and unplug it.

Step 2. Remove the screw from the oven light cover which is located on the back of the cabinet.

Step 3. Replace the oven light with only 115–125 V, 20 W, bulb. If this bulb is not available locally, contact the nearest MESCO authorized Servicenter.

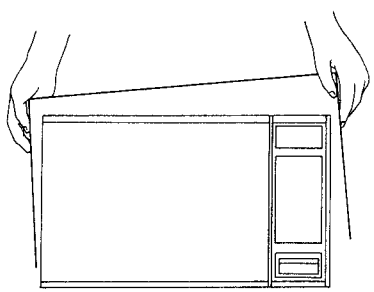
Step 4. Replace the oven light cover.



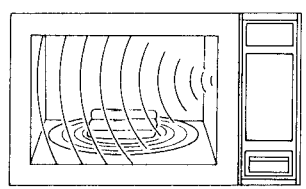
Safety Statements

General Use

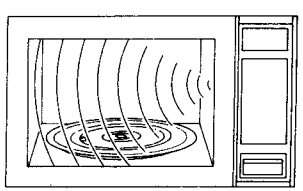
1. Do NOT tamper with or make any adjsutments or repairs to door, control panel housing, safety interlocks switches or any other part of the oven. Do NOT remove outer panel from oven. Repairs should only be done by a qualified serviceperson.
2. Do NOT operate the oven empty. The microwave energy will reflect continuously throughout the oven if no food or water is present to absorb energy.
3. If a fire occurs in the oven, touch the Stop Pad and LEAVE DOOR CLOSED. Disconnect the power cord, or shut off power at the fuse or circuit breaker panel.
4. Do NOT dry clothes, newspapers or other materials in oven. They may catch on fire.
5. Do NOT use recycled paper products, as they may contain impurities which may cause sparks and/or fires when used.
6. Do NOT use newspapers or paper bags for cooking.
7. Do NOT hit or strike control panel. Damage to controls may occur.
8. POT HOLDERS may be needed when cooking. Heat is transferred from the hot food to the cooking container.
9. Do NOT store flammable materials next to, on top, or in the oven. It could be a fire hazard.
10. Do NOT use the oven without the glass tray and roller ring in place.



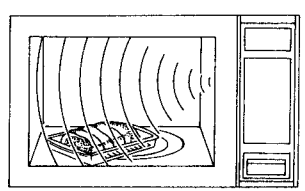
Do NOT remove outer panel from oven.



Do NOT dry clothes or newspapers.



Do NOT operate the oven empty.

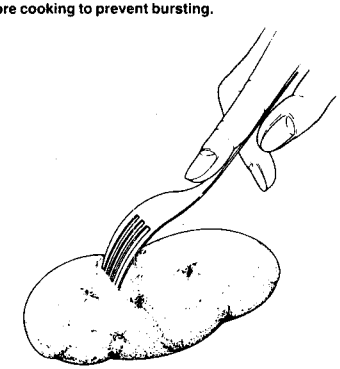


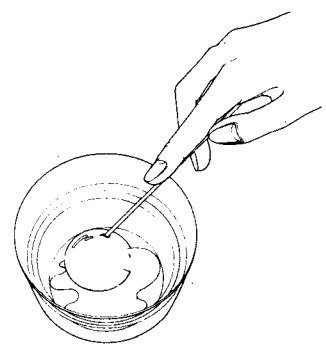
Do NOT use the oven without the glass tray and roller ring in place.

Food

1. Never use your microwave oven for HOME CANNING. The oven is not designed to permit proper canning. Improperly canned food may spoil and be dangerous to consume.
   Leave canning to the proven methods of water bath or pressure canner. (See your cookbook for further information.)
2. COOKING TIMES given in the cookbook are APPROXIMATE. Factors that may affect cooking are: starting temperature, altitude, volume, size and shape of foods and utensils used. As you become familiar with the oven, you will be able to adjust for these factors.
3. It is better to UNDERCOOK RATHER THAN OVERCOOK foods. If food is undercooked, it can always be returned to the oven for further cooking. If food is overcooked, nothing can be done. Always start with minimum cooking times.
4. SMALL QUANTITIES of food or foods with LOW MOISTURE content can burn, dry out or catch on fire if cooked too long. If a fire occurs, touch the Stop Pad and leave oven door closed.
5. Do NOT boil eggs in their shell. Pressure may build up and the eggs will explode.
6. Potatoes, apples, egg yolks, whole acorn squash, sausage are examples of food with NONPOROUS SKINS. These must be pierced before cooking to prevent bursting.
7. POPCORN must be popped in a microwave corn popper. A microwave corn popper is available through Panasonic dealers, model number 18450. In addition, special microwave popcorn is available in some areas of the country. This popcorn pops in its own package and does not require a microwave corn popper. It may be used in this oven.
8. Do NOT attempt to deep fat fry in your oven.
9. Use MEAT THERMOMETER to check doneness of roasts and poultry. If undercooked, return to oven and cook a few more minutes at the recommended power level. DO NOT USE A CONVENTIONAL MEAT THERMOMETER IN THE MICROWAVE OVEN.
10. HEATED LIQUIDS CAN ERUPT if not mixed with air. Do not heat liquids in your microwave oven without first stirring.
11. Use fresh potatoes for baking, and cook until just done. The potatoes will still feel firm to the touch, but are easily pierced with a fork. Overcooking causes dehydration and may cause a fire.

Foods with NONPOROUS SKINS must be pierced before cooking to prevent bursting.





Utensils

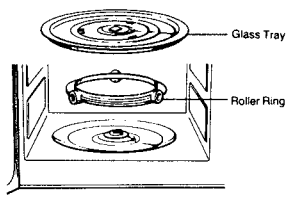
1. MICROWAVE BROWNING DISHES or GRILLS are designed for microwave cooking only. Preheating times vary depending on the size of the browning dish and food being cooked. Always follow instructions provided by the browning dish or grill manufacturer. DO NOT PREHEAT BROWNING DISH ON THE GLASS TRAY MORE THAN 8 MINUTES.
2. METAL CONTAINERS or dishes with metallic rims should not be used. Arcing may occur.
3. METAL TWIST-TIES may not be used in the microwave oven.
4. Do NOT use SEALED JARS or NARROW NECK bottles for cooking or reheating. They may shatter.
5. Do NOT use CONVENTIONAL THERMOMETERS in the microwave oven. They may cause arcing.
6. Remove PLASTIC STORE WRAPS, before cooking or defrosting in the oven.
7. When using foil, skewers, warming rack or utensils made of metal in the oven allow at least one inch of space between metal material and interior oven walls. If arcing (sparking) occurs remove metal material (skewers, etc.) and/or transfer to a non-metallic container.
8. For FURTHER INFORMATION on proper cooking utensils, refer to the Introduction in the Microwave cookbook.

Roller Ring

1. The ROLLER RING and oven floor should be cleaned frequently to prevent excessive noise.
2. The ROLLER RING MUST ALWAYS be used for cooking together with the Glass Tray.

Glass Tray

1. Do NOT operate the oven without the Glass Tray in place.
2. Do NOT use any other Glass Tray with this oven.
3. If Glass Tray is hot, ALLOW TO COOL before cleaning or placing it in water.
4. Do NOT cook directly on the Glass Tray.



Automatic Checking Mechanism

"FFFF" Display in Window:

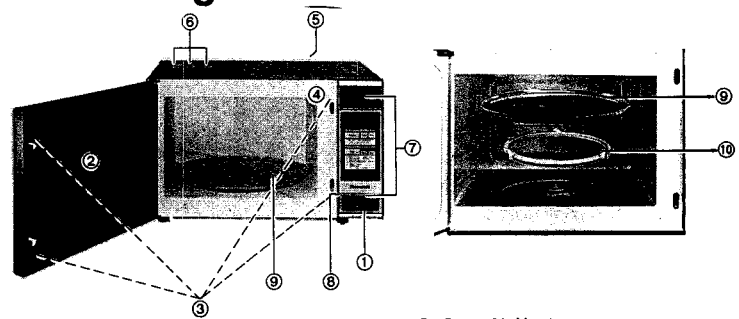
If "FFFF" appears in display window remove the plug from the AC wall outlet, wait 10 seconds and then plug the oven in again.

- If the "FFFF" indication clears, simply reset the time of day and use the oven.
- If the "FFFF" still appears, please contact the nearest Panasonic Servicenter.

Power Failure, etc.:

When the oven is not being used for cooking, the time of day will appear in the display window.
If the oven is affected by a temporary power failure or the plug is removed from electric outlet and then reinserted, the colon in the display window will blink. To reset correct time of day, simply follow the clock set instructions. (See page 9.)

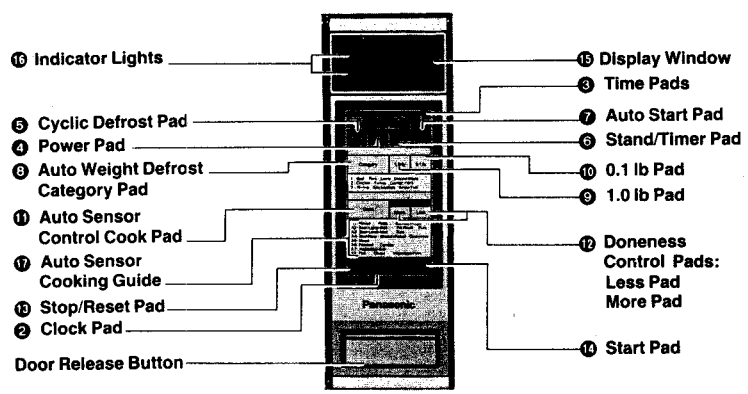
Feature Diagram



① **Door Release Button**
Push door button to open door.
② **Oven Window**
③ **Door Safety Lock System**
Before any cooking function can begin, oven door must be securely shut.
④ **Oven Light**
Will turn on whenever the door is opened or during cooking.
⑤ **Oven Light Cover**
Allows easy access to replace oven light.
See page 22.
⑥ **Oven Air Vents**
Never block air vents during cooking.
⑦ **Control Panel**
⑧ **Name Plate**
Contains model and serial number of your oven
⑨ **Glass Tray**
Must be placed in the oven before cooking.
⑩ **Roller Ring**
Must be placed in the oven before cooking.

Control Panel

⓫ **Controls with Auto Count Up Feature**

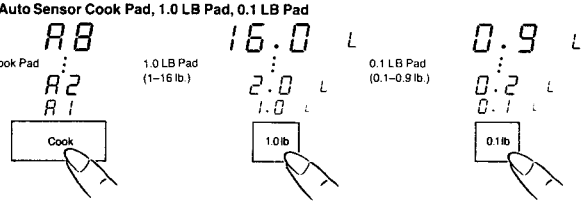

⓰ Indicator Lights
⓯ Display Window
❸ Time Pads
❺ Cyclic Defrost Pad
❼ Auto Start Pad
❹ Power Pad
❻ Stand/Timer Pad
❽ Auto Weight Defrost Category Pad
❿ 0.1 lb Pad
❾ 1.0 lb Pad
⓫ Auto Sensor Control Cook Pad
⓬ Doneness Control Pads: Less Pad More Pad
⓱ Auto Sensor Cooking Guide
⓭ Stop/Reset Pad
❷ Clock Pad
⓮ Start Pad
Door Release Button

Controls

❶ Auto Count Up:

The Time, Power, Auto Weight Defrost Category, 1.0 LB, 0.1 LB and Auto Sensor Cook Pads are all equipped with the Auto Count Up feature. By holding your finger on the pad, the readout in the display window will count up.
After reaching the maximum function, the display will return to the starting point and continue to count up. To stop the readout simply remove your finger from the pad.
Note: When programming the oven, hold your finger firmly in the center of the pad.

Example: Auto Sensor Cook Pad, 1.0 LB Pad, 0.1 LB Pad



❷ Clock Pad:

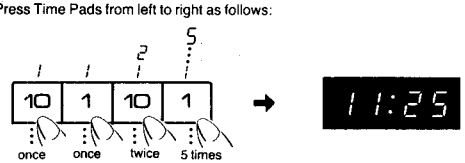
When oven is first plugged in, the colon in the display window will blink.

Clock

To set clock

Step 1. Enter time of day by pressing appropriate Time Pads.
▶Time appears in display window; colon is blinking.

Example: To set 11:25 (a.m. or p.m.),
Press Time Pads from left to right as follows:



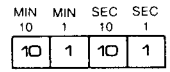
Step 2. Touch Clock Pad.
▶Colon stops blinking; time of day is entered and locked into display.

NOTES ON CLOCK SETTING

1. Clock must be set before oven will operate.
2. To reset time of day touch Clock Pad twice to clear the time. Colon will begin to blink. Enter the correct time of day by following the above procedures.
3. The clock will keep the time of day as long as oven is plugged in and electricity is supplied.

❸ Time Pads:

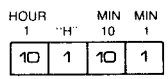
1. Basic Time Setting—All powers except LOW
The Pads serve as a 10 minute pad, 1 minute pad, 10 second pad and 1 second pad from the left, and can be programmed up to 99 minutes and 99 seconds.



Example 1: To set 13 minutes 45 seconds
Touch:
10 MIN Pad: once
1 MIN Pad: 3 times
10 SEC Pad: 4 times
1 SEC Pad: 5 times

Example 2: To set 30 seconds
Touch:
10 SEC Pad: 3 times

2. LOW power
The Pads serve as a 1 hour pad, an inoperable pad, 10 minute pad and 1 minute pad from the left, and can be programmed up to 9 hours and 99 minutes.



Example 1: To set 2 hours 25 minutes
Touch;
1 HOUR Pad: twice
10 MIN Pad: twice
1 MIN Pad: 5 times

Example 2: To set 45 minutes
Touch;
10 MIN Pad: 4 times
1 MIN Pad: 5 times

Note: When LOW is programmed for 1 hour or longer, the time in the display window counts down minute by minute. When less than 59 minutes (59 00) remain, the time counts down second by second.

❹ Power Pad:

Automatically counts down from High to Warm. The following is the approximate wattage for each power level.

Power

HIGH power	(700 watts/Full power)	M. LOW power	(360 watts/50% power)
M. HIGH power	(650 watts/90% power)	LOW power	(200 watts/30% power)
MEDIUM power	(490 watts/70% power)	WARM power	(70 watts/10% power)

❺ Cyclic Defrost Pad:

When DEFROST is selected, the automatic cycle divides the defrosting time into 8 periods which alternate between defrost and stand. The wattage of DEFROST power is approximately 245 watts/35% power.

Defrost

Note: When oven is operating at DEFROST power, Cyclic Defrost indicator light blinks. The light remains on, but does not blink during built-in stand time.

❻ Stand/Timer Pad:

This feature allows you to program a Stand Time after cooking is complete. This pad can also be used to program the oven as a minute timer.

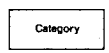
❼ Auto Start Pad:

Allows you to program the time of day you want cooking to start.

Note: Auto Start cannot be programmed before Auto Sensor Cooking. Auto Weight Defrost or Cyclic Defrost. This is to prevent the starting temperature of the food from rising before cooking or defrosting begins. A change in the starting temperature could cause inaccurate results.

❽ Auto Weight Defrost Category Pad:

This feature allows you to defrost meat, poultry or seafood by weight. Choose a defrosting category and program the weight of the food. Weight must be programmed in pounds and tenths of a pound. For further information on Auto Weight Defrost refer to the Introduction in the Microwave Cookbook.
Press this pad to select the appropriate defrosting category 1 through 3. Listed below are the recommended foods and maximum weight limits for each category.



Category	Food	Maximum Weight
1	Ground Meats, Roasts, Ribs, Stew Meat, Chops, Steaks, Frankfurters.	8 lb.
2	Whole or Split Cornish Hens, Whole or cut-up Chicken, Whole Turkey, Turkey Breast.	16 lb.
3	Shrimp (medium), Sea Scallops, Whole Fish	3 lb.

Note: The shape and size of the meat will determine the maximum weight the oven can accommodate.

❾ 1.0 LB Pad:

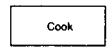
Press this pad to program the weight of your food by whole pounds.

❿ 0.1 LB Pad:

Press this pad to program with weight of your food by tenths of a pound. To convert ounces into tenths of a pound, see conversion chart in the Introduction of the Microwave Cookbook.

⓫ Auto Sensor Cook Pad:

Press this pad to choose auto cycle for your food. For proper cooking results, cook foods from their normal storage places. For example, meats should be refrigerator cold, vegetables and cakes should be room temperature.
The appropriate food categories for each Auto Sensor Cycle are as follows. For further information, refer to Introduction and Auto Sensor recipes in Cookbook.



Cycle Number	Food Category
A1	Reheat, Pasta, Canned Food, Frankfurters
A2	Beef/Lamb-Well, Pork, Whole Poultry, Meatloaf, Pot Roast
A3	Beef/Lamb-Med, Rice
A4	Beef-Rare, Poultry Pieces, Casseroles
A5	Stews
A6	Potatoes, Carrots
A7	Vegetables-Soft
A8	Fish, Chops, Vegetables-Firm

⓬ Doneness Control Pads:

Preferences for food doneness vary with each individual. After having used the Auto Sensor Cycles a few times, you may decide you would prefer your food cooked to a different doneness. By using the Doneness Control, the Auto Sensor programs can be adjusted to cook food for a longer or shorter time.

Note: If you are satisfied with the result of cooking with the built-in Auto Sensor program, you do not need to use these pads.

More Pad:
Use when you want your food to be cooked a little more than the built-in Auto Sensor program.

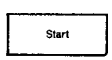
Less Pad:
Use when you want your food to be cooked a little less than the built-in Auto Sensor program.

⓭ Stop/Reset Pad:

Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day appears in display window.

⓮ Start Pad:

One tap allows oven to begin functioning. If door is opened or Stop/Reset Pad is tapped once during oven operation, Start Pad must again be touched to restart oven.



⑮ Display Window:
Displays time of day before or after cooking, time during cooking and Auto Sensor Cycle number and doneness symbol.

Digital Readout Display:

Time

(99 min. 99 sec./9 hr. 99 min.)

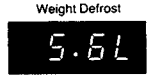
Auto Sensor Cook

(A5, More)

Clock

(5 min. past 8 o'clock)

Weight Defrost



(5.6 lbs)

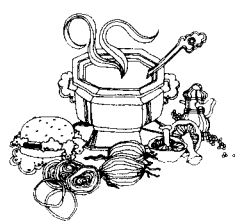
⑯ Indicator Lights:
An indicator light will turn on when a specific power level and/or the following functions are selected: Auto Sensor Cook, Cyclic Defrost, and Stand.
Note: When Timer function is selected no indicator light will turn on.

⑰ Cooking Guide:
Easy reference for Auto Sensor Cooking.

Other Functions:

Opening Door:
Opening the door during cooking will stop the cooking process without canceling the program. Cooking resumes as soon as the door is closed and Start Pad is touched. The oven light will stay on or turn on whenever the door is opened.

Beep Sound:
When a pad is touched correctly, a beep will be heard. If a pad is touched and no beep is heard, the unit has not or cannot accept the instruction. The oven will beep twice between programmed stages. At the end of any complete program, the oven will beep 5 times.



Auto Sensor Cooking

Auto Sensor Cooking allows you to cook most of your favorite foods without having to select cooking times and powers. The oven does it all automatically.

For proper cooking results on Auto Sensor Cycles, be sure to cover foods securely with plastic wrap or place foods in a glass casserole with a proper fitting lid.

For further information refer to the Introduction in the Cookbook and Auto Sensor recipes.

Step 1

Press the Auto Sensor Cook Pad until the desired Auto Cycle number (A1–A8) appears in display window.

Cook

Example: A4

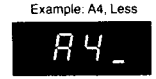
▶Clock time disappears. The selected Auto Sensor Cycle number appears in display window. The Auto Sensor Cook indicator lights also appear in display window.

If Desired

Touch More Pad or Less Pad for the doneness of your food.

More or Less

Example: A4, Less



▶Selected doneness symbol appears in display window.
Note: Doneness Control can not be used with A1 cycle.

Step 2

Touch Start Pad.

Start

After Oven Starts

▶MICROWAVE ACTIVITY STARTS. The Auto Sensor Cook indicator light starts to blink. The turntable rotates. Oven light turns on.
▶WHEN AUTO SENSOR CYCLE (A2 THROUGH A8) DISAPPEARS FROM DISPLAY WINDOW, the oven beeps twice. The remaining cooking time appears in display window and begins to count down. The Cook indicator light continues to blink. (If doneness selection was made, its symbol disappears.)
Note: On cook A1 no time will appear in display window. The Cook indicator light stops blinking and oven beeps 5 time. The cooking cycle is complete.
▶WHEN AUTO SENSOR COOK CYCLE IS COMPLETED, the oven beeps 5 times and shuts off. Indicator and oven lights turn off. The turntable stops rotating. The time of day reappears in display window.

NOTES ON AUTO SENSOR COOKING:

The Auto Sensor system works by detecting a build-up of steam on the humidity sensor. As foods cook in a microwave, steam is produced. When foods are covered, the steam will build up and escape from the dish in a burst. This burst of steam is detected by the humidity sensor and then the oven automatically calculates the remaining cooking time.

When an Auto Sensor Cycle is selected A1 through A8 will appear in the display window. The oven door should not be opened for longer than one minute when A1 through A8 appears in the display window. Opening the door may cause inaccurate cooking results. Once the steam is detected, the remaining cooking time immediately appears in the display window and begins to count-down. At this time, the oven door may be opened, to stir, turn or add foods.

- Auto Sensor Cooking is successful with the foods and recipes found in the Genius Cookbook and marked with the Symbol [A]. Because of the vast differences in food composition, recipes and charts without the Auto Sensor symbol should be prepared in your microwave oven using the Power and Time features.
- When cooking by Auto Sensor, the oven door should not be opened for longer than 1 minute while A1–A8 is in display window. Opening the door for longer than 1 minute may cause inaccurate cooking results. Once time appears in display window, the door may be opened and foods can be stirred or turned.
- All foods for Auto Sensor Cooking are taken from their normal storage place.
- Before using Auto Sensor feature, make sure glass tray in the oven is dry to assure best Auto Cooking results.
- Room temperature of heat surrounding the oven should not be above 95°F when using Auto Sensor Cooking feature. Inaccurate cooking may result.
- Foods less than 3 or 4 ounces should be cooked by power and time, not by the Auto Sensor Cooking Cycle.

The appropriate food categories for each Auto Sensor Cycle are as follows. For further information, refer to Introduction and Auto Sensor recipes in Cookbook.

Cycle Number	Food Category
A1	Reheat, Pasta, Canned Food, Frankfurters
A2	Beef/Lamb-Well, Pork, Whole Poultry, Meatloaf, Pot Roast
A3	Beef/Lamb-Med, Rice
A4	Beef-Rare, Poultry Pieces, Casseroles
A5	Stews
A6	Potatoes, Carrots
A7	Vegetables-Soft
A8	Fish, Chops, Vegetables-Firm

- When the remaining cooking time is over 60 minutes the time will appear as hours and minutes.

Example: If the cooking time is 94 minutes, display window will show 1H34. The seconds will not visibly count down in display window until 59 minutes remain. The time in display window will then show in minutes and seconds, and count down in seconds.

- Preferences for food doneness vary with each individual.
  After having used the Auto Sensor Cycles a few times, you may decide you would prefer your food cooked to a different doneness. By using the Doneness Control, the Auto Sensor programs can be adjusted to cook food for a longer or shorter time.
  Note: •If you are satisfied with the result of cooking with the built-in Auto Sensor program, you do not need to use these pads.
  •Doneness Control can be used with A2–A8 cycles.

- You may program desired power and/or stand after Auto Sensor program.

Examples are:

First Stage		Second Stage
Auto Sensor Cook, A3	→	Stand, 5 minutes
Auto Sensor Cook, A5	→	WARM, 20 minutes

- Examples of display for Auto Sensor Cooking are:

(A3 Cycle)

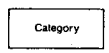
(A5 Cycle, More)

(A8 Cycle, Less)

Auto Weight Defrost

Step 1

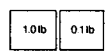
Press Auto Weight Defrost Category Pad to select Defrost Category 1 through 3.



▶Clock time disappears. The selected category number appears in the display window. Auto Weight Defrost indicator light turns on.

Step 2

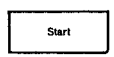
Set the weight of your meat by pressing 1.0 (lb) Pad and/or 0.1 (lb) Pad.



▶Category number disappears and the weight selected appears in the display window.

Step 3

Touch Start Pad.



After Oven Starts:

▶MICROWAVE DEFROSTING BEGINS. Turntable rotates. Oven light turns on. Auto Weight Defrost indicator light begins to blink. Weight in display disappears. Defrosting time appears and counts down second by second.
▶WHEN DEFROSTING IS COMPLETED, oven beeps five times and shuts off. Turntable stops. The indicator light and oven light turn off. Time of day appears in display window.

NOTES ON AUTO WEIGHT DEFROST:

1. Categories for Weight Defrost are:

Category	Food	Maximum Weight
1	Ground Meats, Roasts, Ribs, Stew Meat, Chops, Steaks, Frankfurters.	8 lb.
2	Whole or Split Cornish Hens, Whole or cut-up Chicken, Whole Turkey, Turkey Breast.	16 lb.
3	Shrimp (medium), Sea Scallops, Whole Fish	3 lb.

2. Stand time or power and time cooking may be programmed after Weight Defrost.
3. Auto Start can not be programmed before Auto Weight Defrost.
4. For further information on Auto Weight Defrost refer to Introduction in the microwave cookbook.

Note: The shape and size of the meat will determine the maximum weight the oven can accommodate.

Time Cooking

Cyclic Defrost

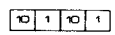
Step 1

Touch Cyclic Defrost Pad.

▶Clock time disappears. Cyclic Defrost indicator light turns on.

Step 2

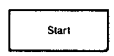
Set defrost time by pressing Time Pads.



▶Cyclic Defrost indicator light turns on.

Step 3

Touch Start Pad.



After Oven Starts:

▶MICROWAVE DEFROSTING BEGINS. Turntable rotates. Oven light turns on Cyclic Defrost indicator light begins to alternately blink and glow. Defrosting time counts down second by second.
▶WHEN DEFROSTING IS COMPLETED, oven beeps five times and shuts off. Turntable stops rotating. Defrost indicator light and oven light turn off. Time of day appears in display window.

One Stage Cooking

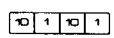
Step 1

Select cooking power by pressing Power Pad.

▶Clock time disappears. Selected power indicator light turns on.

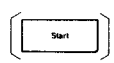
Step 2

Set cooking time by pressing Time Pads.



▶Cooking time appears in display window in minutes and seconds.

[Step 3. Touch Start Pad.]



OR

Two Stage Cooking

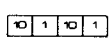
Step 3

Before touching Start Pad, select second cooking power by pressing Power Pad.

▶Previously selected time and power indicator light disappear from display window. Second stage power indicator light turns on.

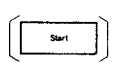
Step 4

Set second stage cooking time by pressing Time Pads.



▶Second stage cooking time appears in display window.

[Step 5. Touch Start Pad.]



OR

Three Stage Cooking

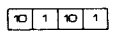
Step 5

Before touching Start Pad, select third stage cooking power by pressing Power Pad.

▶Previously selected time and power indicator light disappear from display window. Third stage power indicator light turns on.

Step 6

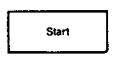
Set third stage cooking time by pressing Time Pads.



▶Third stage cooking time appears in display window.

Step 7

Touch Start Pad.



After oven starts:

▶MICROWAVE COOKING BEGINS. Turntable rotates. Oven light turns on. Third stage cooking time disppears and first stage cooking time reappears in the display window and begins to count down. First stage power indicator light turns on and starts to blink. Second stage power indicator light turns on. Third stage power indicator light remains on.

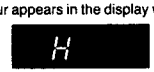
▶WHEN THE FIRST STAGE COOKING TIME HAS ELAPSED, a beep sounds twice. Second stage cooking time reappears in the display window and begins to count down. First stage power indicator light turns off. Second stage power indicator light starts to blink. Third stage power indicator light remains on.

▶WHEN THE SECOND STAGE COOKING TIME HAS ELAPSED, a beep sounds twice. Third stage cooking time reappears in the display window and begins to count down. Second stage power indicator light turns off. Third stage power indicator light starts to blink.

▶WHEN THE THIRD STAGE COOKING TIME HAS ELAPSED, five beeps are heard and oven turns off. Third stage power indicator light turns off. Oven light turns off and turntable stops rotating. Time of day reappears in the display window.

NOTES ON TIME AND POWER COOKING:

1. When LOW power is programmed "H" meaning Hour appears in the display window. Cooking time can only be programmed in hours and minutes.



2. When LOW power is programmed for 1 hour or longer, the time will count down minute by minute. When less than 59 minutes (59 00) remain, the time will count down second by second.

3. Examples of 2 and 3 stage programmed cooking are:

First Stage	Second Stage	Third Stage
HIGH, 8 minutes	Stand, 3 minutes	
HIGH, 9 minutes →	MEDIUM-LOW, 20 minutes →	WARM, 15 minutes
HIGH, 10 minutes	MEDIUM, 20 minutes	Stand, 5 minutes

Special Controls

Auto Start

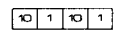
Step 1

Touch Auto Start Pad.

▶Clock time disappears from display window. Auto Start indicator light turns on, and colon (:) stays on.

Step 2

Set the time of day you want the oven to begin cooking by pressing Time Pads.



▶Selected start time appears in display window.

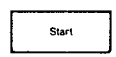
Step 3

Program desired cooking according to directions already given in this manual.

▶Start time with colon and Auto Start indicator light disappear. Selected program and indicator lights appear in display window.

Step 4

Touch Start Pad.



After Oven Starts:

▶NO COOKING ACTIVITY BEGINS. Turntable does not rotate. Oven light does not turn on. Selected program and indicator lights disappear. Current day time appears. Auto Start indicator light turns on and colon starts to blink.

▶WHEN SELECTED START TIME APPEARS IN THE DISPLAY WINDOW, oven beeps twice and enters into previously selected cooking function. Oven light turns on and turntable begins to rotate. Auto Start indicator light and colon turn off while next stage indicator lights begin to blink.

▶WHEN COOKING IS COMPLETED, oven beeps five times and shuts off. Turntable stops rotating, oven light and indicator lights turn off, and time of day appears in display window.

NOTES ON AUTO START:

1. With the Auto Start feature, the oven may be programmed to start cooking up to 11 hours and 59 minutes before cooking starts.
2. Before cooking, to recall selected start time, press Auto Start Pad. Start time will appear in display window while your finger is touching the pad.
3. Only one or two stage cooking can be programmed after Auto Start.
4. Auto Start cannot be programmed before Auto Sensor Cooking, Auto Weight Defrost, or Cyclic Defrost. This is to prevent the starting temperature of the food from rising before cooking or defrosting begins. A change in the starting temperature could cause inaccurate results.

Timer

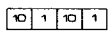
Step 1

Touch Stand/Timer Pad.

►Clock time disappears from display window. No indicator light turns on.

Step 2

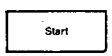
Set desired amount of time by pressing Time Pads.



►Selected amount of time appears in display window.
(A maximum of 99 minutes and 99 seconds may be programmed.)

Step 3

Touch Start Pad.



After Oven Starts:

►NO COOKING ACTIVITY BEGINS. Turntable does not rotate. Oven light does not turn on. Only the time displayed starts to count down.

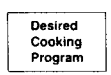
►WHEN PROGRAMMED TIME HAS ELAPSED, oven beeps five times. Time of day appears in display window.

Note: If oven door is opened during the timer function, the time in the display window will continue to count down. When using the timer, an indicator light will not go on in the display window.

Stand Time

Step 1

Program desired cooking program according to directions already given in this manual.



►Selected program and indicator light appear in display window.

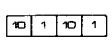
Step 2

Touch Stand/Timer Pad.

►Previously selected program and indicator lights disappear. Stand indicator light turns on.

Step 3

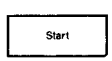
Set desired amount of time by pressing Time Pads.



►Stand Time appears in display window.
(A maximum of 99 minutes and 99 seconds may be programmed twice.)

Step 4

Touch Start Pad.



After Oven Starts:

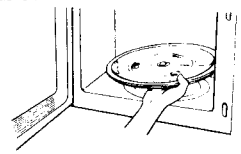
►MICROWAVE COOKING BEGINS. Turntable rotates. Oven light turns on. Previously selected program appears in display window, and indicator light blinks.

►WHEN MICROWAVE PROGRAM is completed, turntable stops, oven beeps twice, and standing time counts down. Stand indicator light turns on while oven light turns off.

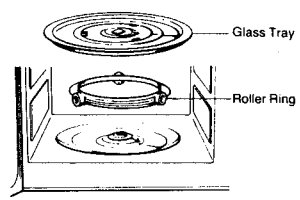
►AT END OF STAND TIME, oven beeps five times and shuts off. Stand indicator light turns off. Time of day appears in display window.

Care of Your Microwave Oven

1. Turn the oven off before cleaning.
2. Keep the inside of the oven clean. When food spatters or spilled liquids adhere to oven walls, wipe with a damp cloth. Mild detergent may be used if the oven gets very dirty. The use of harsh detergent or abrasives is not recommended.
3. The outside oven surface should be cleaned with soap and water, rinsed and dried with a soft cloth. To prevent damage to the operating parts inside the oven, water should not be allowed to seep into the ventilation openings.
4. If the Control Panel becomes wet, clean with a soft, dry cloth. Do not use harsh detergents or abrasives on Control Panel. When cleaning the Control Panel, leave oven door open to prevent oven from accidentally turning on. After cleaning touch Stop/ Reset Pad to clear display window.
5. If steam accumulates inside or around the outside of the oven door, wipe with a soft cloth. This may occur when the microwave oven is operated under high humidity conditions and in no way indicates malfunction of the unit.
6. It is occasionally necessary to remove the glass tray for cleaning. Wash the tray in warm sudsy water or in a dishwasher.



7. The roller ring and oven cavity floor should be cleaned regularly to avoid excessive noise. Simply wipe the bottom surface of the oven with mild detergent water or window cleaner and dry. The roller ring may be washed in mild sudsy water or dish washer. Cooking vapors collect during repeated use but in no way affects the bottom surface or roller ring wheels.
When removing the roller ring from cavity floor for cleaning, be sure to replace in the proper position.



Replacement of Oven Light

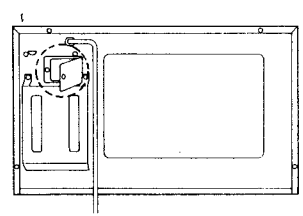
When it becomes necessary to replace the oven light, you can replace it yourself. Please follow the directions below carefully.

Step 1. Turn off the oven and unplug it.

Step 2. Remove the screw from the oven light cover which is located on the back of the cabinet.

Step 3. Replace the oven light with only 115–125 V, 20 W bulb. If this bulb is not available locally, contact the nearest MESCO authorized Servicenter.

Step 4. Replace the oven light cover.



SCHEMATIC DIAGRAM (NE-8070, NE-7970)

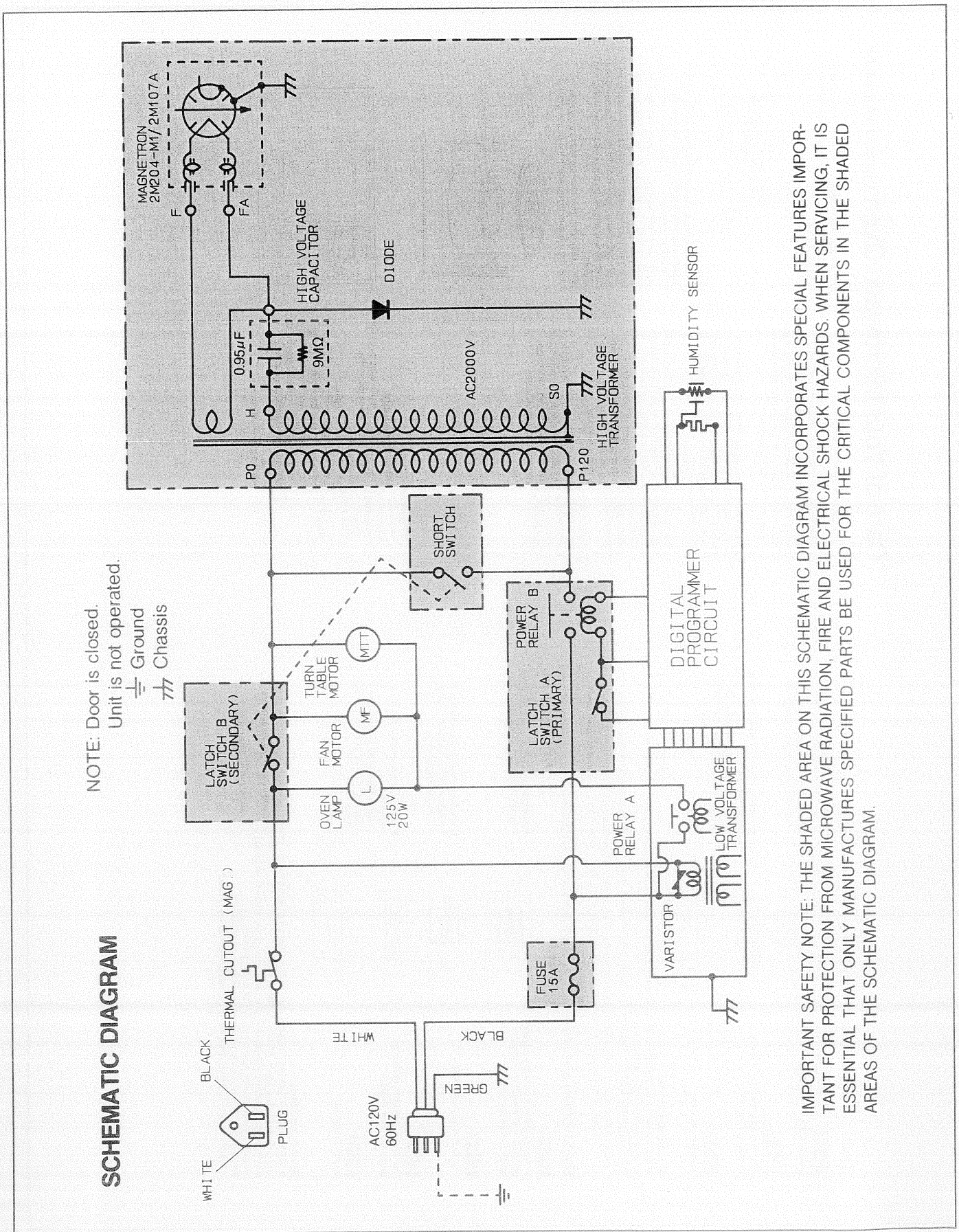


Fig. 1

SCHEMATIC DIAGRAM (NE-8070C, NE-7970C)

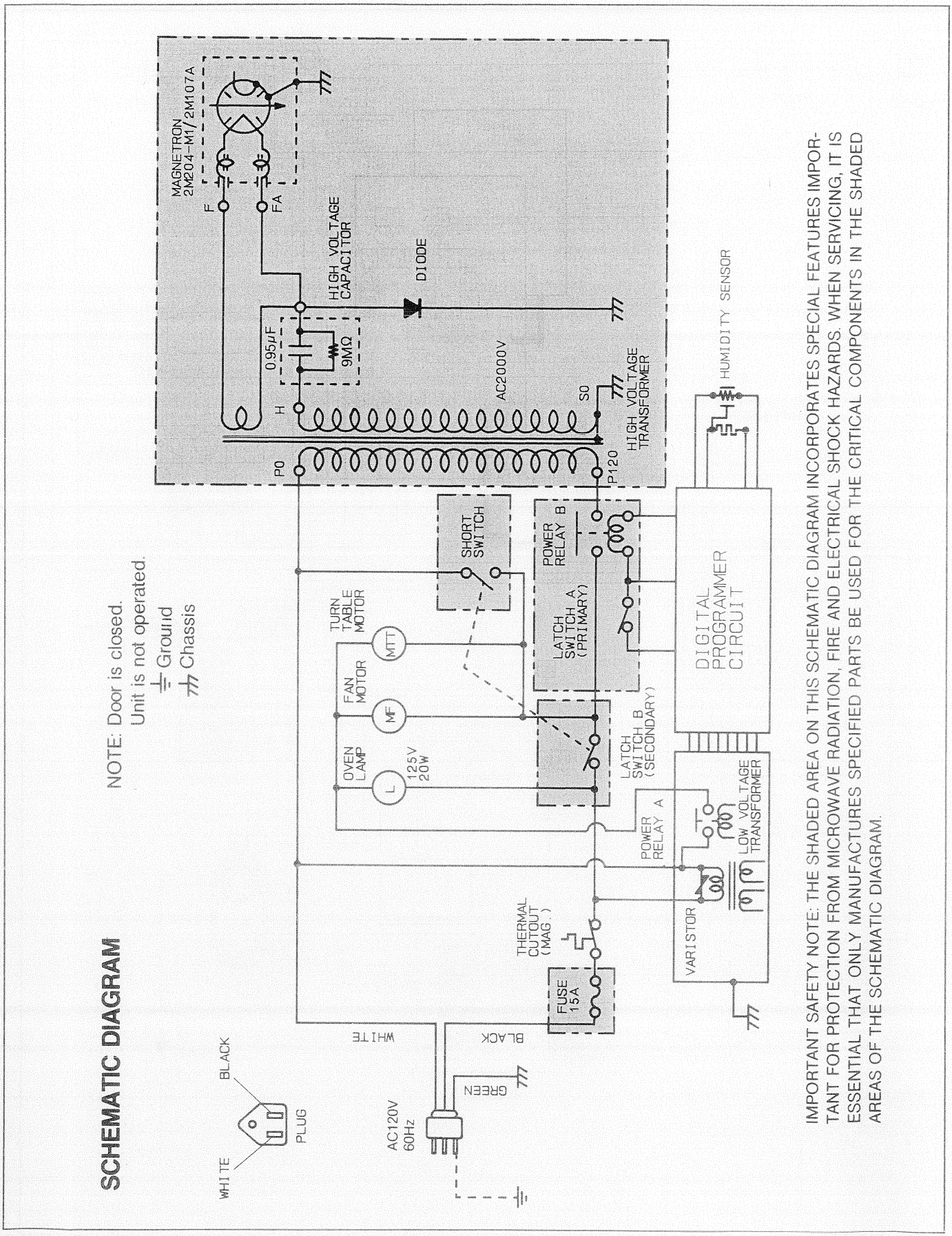
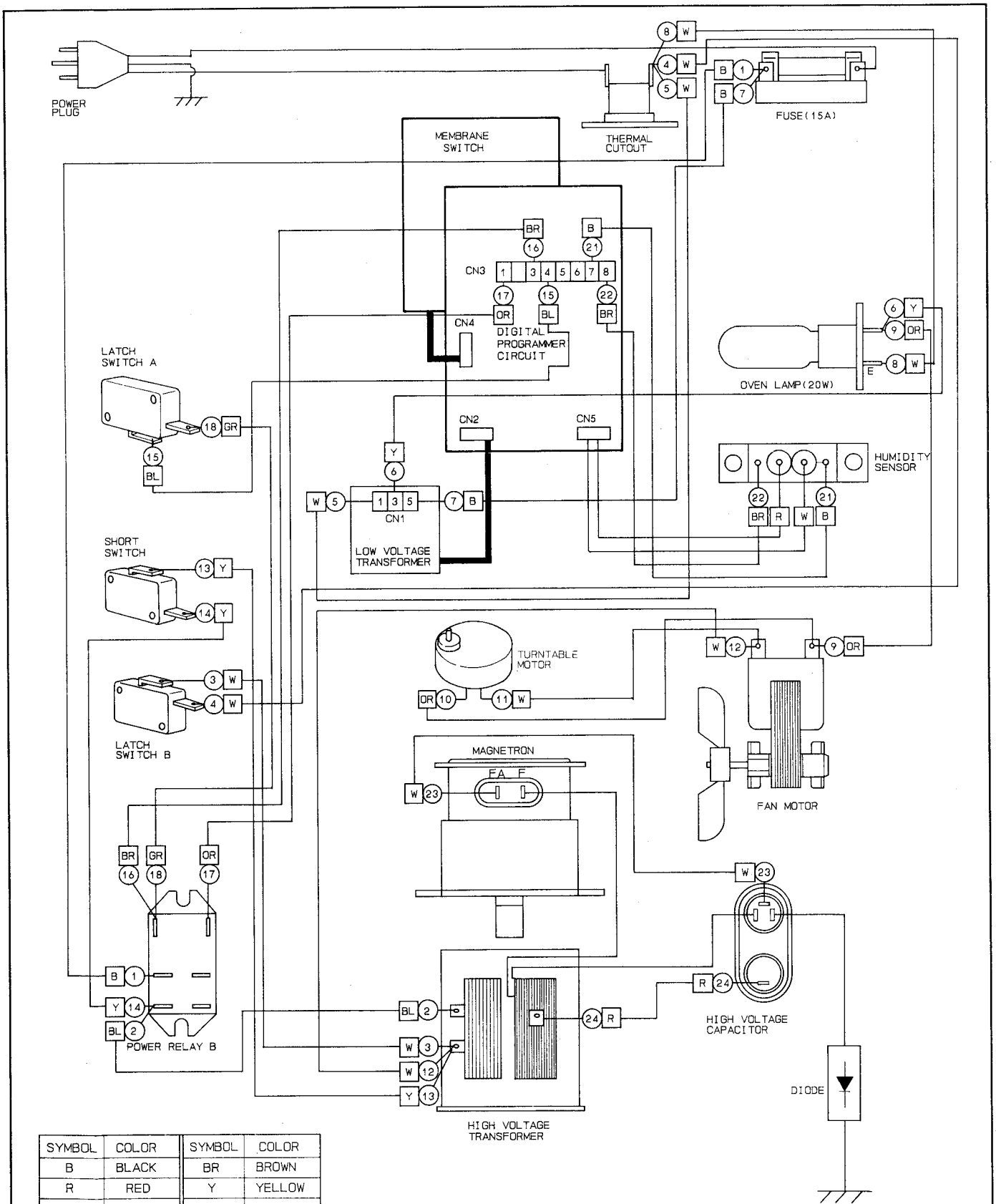


Fig. 2

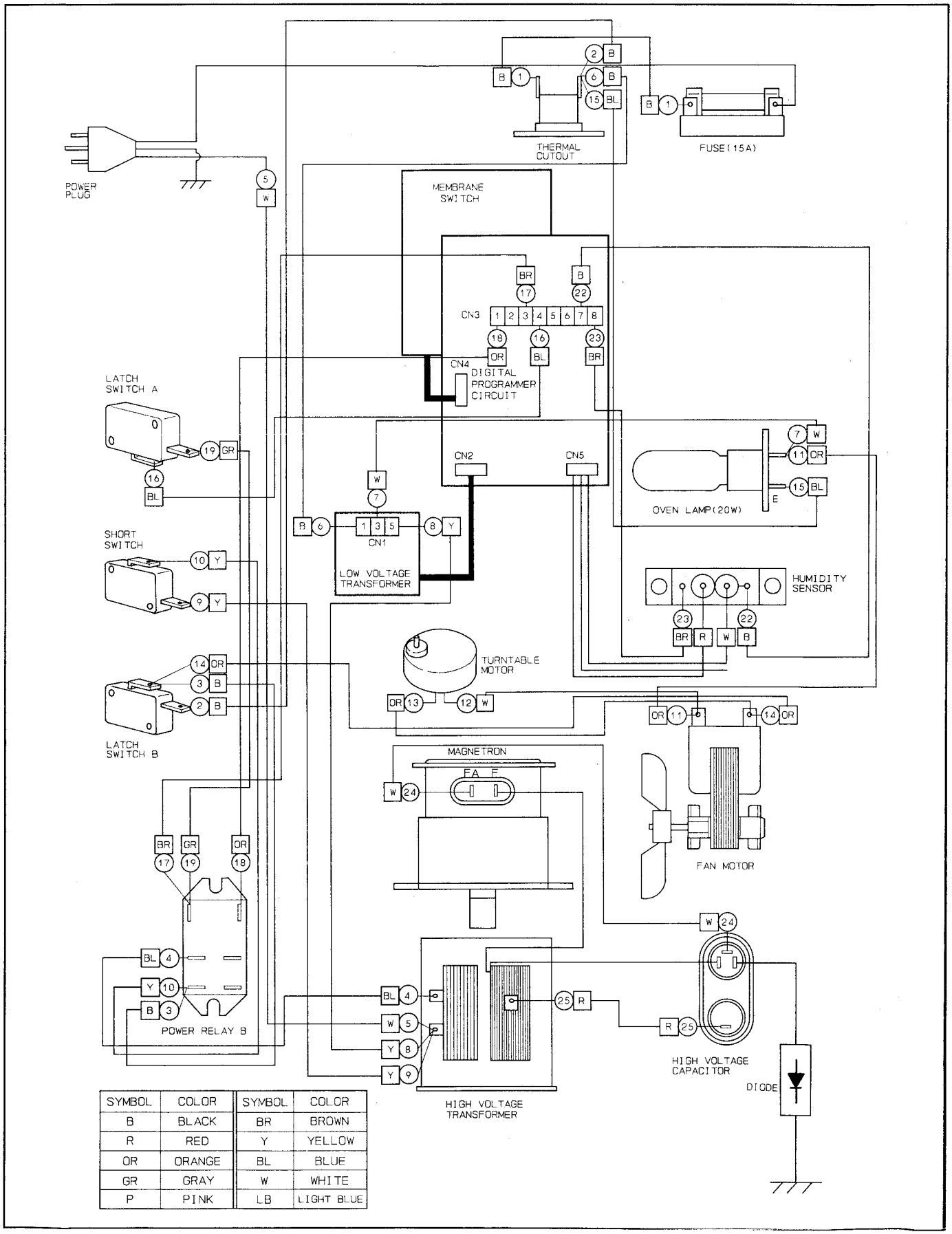
WIRING DIAGRAM (NE-8070, NE-7970)



SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	BR	BROWN
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
P	PINK	LB	LIGHT BLUE

Fig. 3

WIRING DIAGRAM (NE-8070C, NE-7970C)



SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	BR	BROWN
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
P	PINK	LB	LIGHT BLUE

Fig. 4

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control

The coil of power relay B is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from "Warm" to "High" power.
One complete ON and OFF cycle of power relay B is 22 seconds.
The relation between indications on the control panel and the output of the microwave oven is as shown in **Fig. 5.**

NOTE: **The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.**

2. Cyclic defrost

When Defrost power and defrosting time is selected and Start pad is tapped:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 cycles of alternating ON-OFF intervals of Defrosting power and standing periods. (See **Fig. 6**)

(B) During Defrosting periods, power relay B is energized for 9 seconds and de-energized for 13 seconds by DPC resulting in approximately 245 watts of microwave power. (See **Fig. 7**)

(C) During Standing periods, power relay B is always open resulting in no microwave power.

NOTE: **Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.**

Example 1: If defrosting time is selected for 2 minutes 56 seconds, each operating period will be as follows: (See **Fig. 8**)
2 minutes 56 seconds = 176 seconds
176/8 = 22

Example 2: If Defrosting time is selected for 5 minutes, each operating period will be as follows : (See **Fig. 9**)
5 minutes = 300 seconds
300/8 = 37 and remainder is 4 seconds.
The 4 seconds is added to the last time period.

NOTE: **When defrosting time is selected for not more than 7 seconds, the power relay B will not be energized at all.**

INDICATION	OUTPUT POWER AGAINST HIGH POWER	ON, OFF TIME ON POWER RELAY B
High	22/22 (700W)	22S ON, 22S ON
M. High	21/22 (650W)	21S ON, 1S OFF, 21S ON, 1S OFF
Med	17/22 (480W)	17S ON, 5S OFF, 17S ON, 5S OFF
M. Low	13/22 (360W)	13S ON, 9S OFF, 13S ON, 9S OFF
Low	8/22 (190W)	8S ON, 14S OFF, 8S ON, 14S OFF
Warm	4/22 (70W)	4S ON, 18S OFF, 4S ON, 18S OFF
Defrost	Approx 110W	Please refer to description of cyclic defrost.

Fig. 5

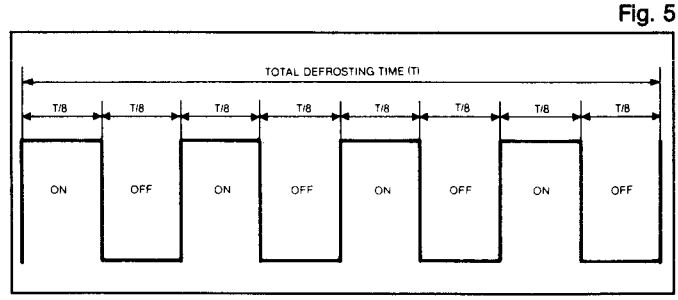


Fig. 6

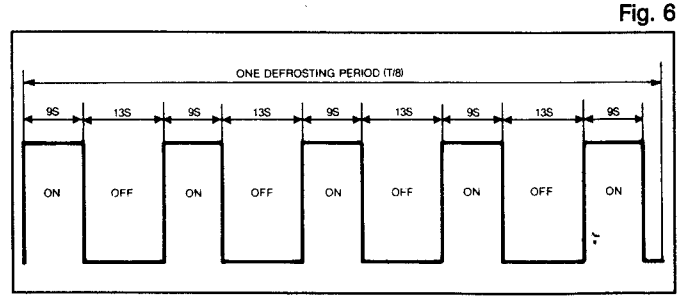


Fig. 7

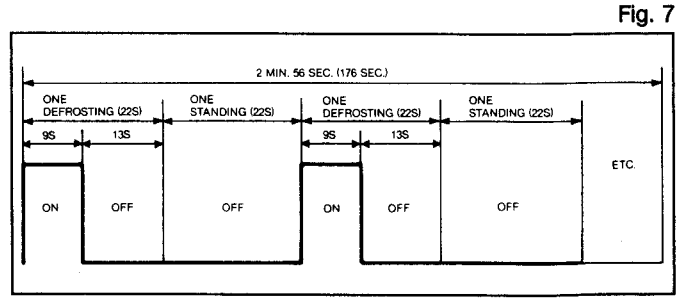


Fig. 8

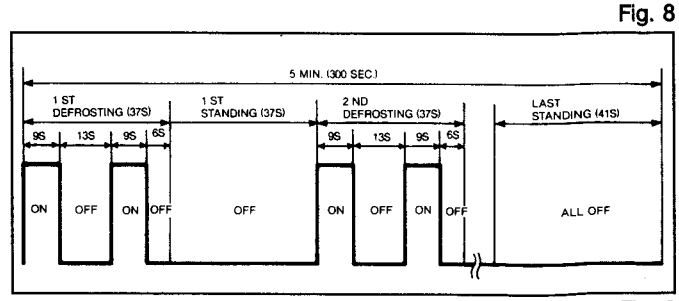


Fig. 9

3. Auto weight defrost control

Consists of the following pads :

- Category Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Defrost feature is selected by tapping the appropriate key pads and the start pad is tapped.

(A) The digital programmer circuit determines the power level and defrosting time to complete defrosting and indicates the operating state in the display window. (See **Fig. 10**)
Fig. 10 shows the corresponding defrosting times with respective weights by categories.

(B) When defrosting time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

WEIGHT SELECTED	DISPLAY	TOTAL DEFROSTING TIME		
		CATEGORY 1	CATEGORY 2	CATEGORY 3
1 LB	1.0 lb	11 min. 30 sec.	12 min. 30 sec.	11 min. 30 sec.
2 LB	2.0 lb	23 min. 00 sec.	25 min. 00 sec.	23 min. 00 sec.
3 LB	3.0 lb	34 min. 30 sec.	37 min. 30 sec.	34 min. 30 sec.
4 LB	4.0 lb	46 min. 00 sec.	51 min. 00 sec.	—
5 LB	5.0 lb	1 hour 02 min.	1 hour 07 min.	—
6 LB	6.0 lb	1 hour 18 min.	1 hour 24 min.	—
7 LB	7.0 lb	1 hour 34 min.	1 hour 40 min.	—
8 LB	8.0 lb	1 hour 50 min.	1 hour 43 min.	—
9 LB	9.0 lb	—	1 hour 48 min.	—
10 LB	10.0 lb	—	1 hour 52 min.	—
11 LB	11.0 lb	—	1 hour 57 min.	—
12 LB	12.0 lb	—	2 hour 01 min.	—
13 LB	13.0 lb	—	2 hour 06 min.	—
14 LB	14.0 lb	—	2 hour 10 min.	—
15 LB	15.0 lb	—	2 hour 15 min.	—
16 LB	16.0 lb	—	2 hour 19 min.	—

Fig. 10

AUTO SENSOR EXPLANATION, K FACTORS AND POWER LEVELS

1. Auto sensor cooking

Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.
All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding Auto Sensor Cooking

As a food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: **Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepard in the microwave oven using power select and time features. Please consult Variable Power Microwave Cookbook for procedures.**

- COOK
- FROZ - COOK (NE-8070, NE-8070C only)

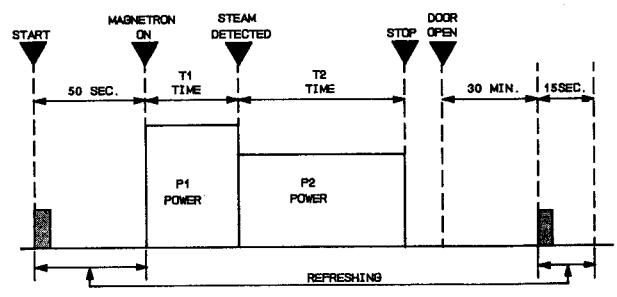


Fig. 11

2. Auto sensor cooking process

Explanation of the Auto Sensor Cooking process (See Fig.11 and 12)

1) The shaded columns in both graphs indicate when the humidity sensor heater is on.
2) During the first 50 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 50 seconds is subtracted from the T1 time. In other words T1 time starts at the end of the 50 second period. (This 50 second period is needed for the sensor element to stabilize and balance itself to the humidity present before microwave activity starts.)
3) **T1 time**·····The total amount of time it takes the microwave oven to switch to T2 time after the 50 second period. During this time one of the Auto Sensor programs (A1-A8) will be shown in display.
4) **T2 time**·····When the steam escapes from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.
5) **Warm**·····There is a 60 minite warm cycle at the end of the Auto Sensor programmed COOK-WARM and FROZ-COOK-WARM (For NE-8070, NE-8070C only). When the warm starts, the first 20 minutes will be at zero power to let the temperature of the food equalize. Then for the remaining 40 minutes the oven will be operating at 35 watts of power to keep the food warm.

NOTE: If T1 time is over 60 minutes, oven stops automatically and "FF FF" appears in display window.

Balance of cooking time (T2 time)

The balance of cooking time which is called T2 time, can be calculated by the following formula.

T2 time (in sec.) =T1 time × K factor

NOTE: When calculating T2 time, the last digit of T1 time in seconds is cut away. For instance, if the T1 time is 56 seconds, the T2 time will be:

T2 = 50 × K

Remember, the T1 time starts after the 50 second period. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers. (See Fig. 13 and Fig. 14)

NOTE: When "More" or "Less" pad is selected, the K factor varies as shown in Fig. 13 and Fig. 14 resulting in T2 time to be increased or decreased.

Some examples of calculating the T2 time

Example 1: If the T1 time is measured to be 2 minutes and 45 seconds after the 50 second period, and the Auto program selected is COOK A2:

T2 = T1 × K
= 2 min. and 45 sec. × 2
= 160 sec. × 2
= 320 sec.
= 5 min. and 20 sec.

Example 2: If the T1 time is measured to be 15 minutes and 30 seconds after the 50 second period, and the Auto program selected is FROZ-COOK-WARM A3:

T2 = T1 × K
= 15 min. and 30 sec. × 1.6
= 930 sec. × 1.6
= 1488 sec.
= 24 min. and 48 sec.

Example 3: If More pad is tapped with Example 2:

T2 = T1 × K
= 15 min. and 30 sec. × 1.9
= 930 sec. × 1.9
= 1767 sec.
= 29 min. and 27 sec.

NOTE: If using a calculator please remember the calculator rounds off in decimal numbers, so the T2 time will come out slightly different than if seconds are changed back to minutes by regular long division. When using a calculator, simply maltiply the tenths by 60 to get the correct number of seconds.
For instance take the T2 time in seconds from Example 2 above. Using the calculator divide 60 into 1488 and the quotient will be 24.8 Then multiply 0.8 by 60 and the product will be 48 seconds.

• COOK - WARM, FROZ - COOK - WARM
(For NE-8070, NE-8070C only)

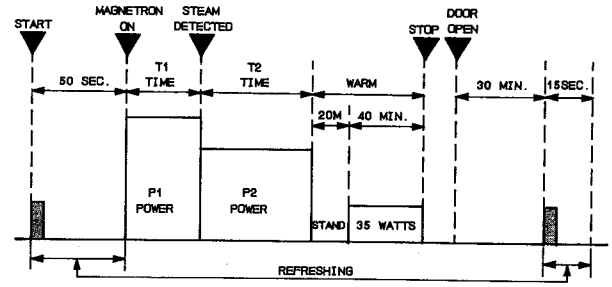


Fig. 12

	COOK		COOK - WARM		
	P1 Power	P2 Power	K factor		
			Standard	More	Less
A1	HIGH	—	0	0	0
A2	HIGH	M. LOW	2	approx. 2.4	approx. 1.6
A3	HIGH	M. LOW	1	approx. 1.2	approx. 0.8
A4	HIGH	M. LOW	0.3	approx. 0.4	approx. 0.2
A5	MED	M. LOW	2.5	approx. 3	approx. 2
A6	MED	MED	1.3-2	approx. 1.6-2.4	approx. 1-1.6
A7	MED	MED	1	approx. 1.2	approx. 0.8
A8	MED	MED	0.3	approx. 0.4	approx. 0.2

Fig. 13

	FROZ - COOK		FROZ - COOK - WARM		
	P1 Power	P2 Power	K factor		
			Standard	More	Less
A1	HIGH	MED	0.8	approx. 1	approx. 0.6
A2	MED	HIGH	0.7	approx. 0.8	approx. 0.6
A3	MED	LOW	1.6	approx. 1.9	approx. 1.3
A4	MED	LOW	1.0-1.4	approx. 1.2-1.7	approx. 0.8-1.1
A5	HIGH	MED	0.8	approx. 1	approx. 0.6
A6	MED	LOW	0.4	approx. 0.5	approx. 0.3
A7	MED	MED	0.3	approx. 0.4	approx. 0.2
A8	MED	MED	1	approx. 1.2	approx. 0.8

Fig. 14

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor

For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking parts, short between oven chassis and the terminal of high voltage capacitor (terminal of lead wire from magnetron filament, high voltage transformer filament lead wire and diode lead wire) with an insulated screwdriver to discharge. (See **Fig. 15**)

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch:

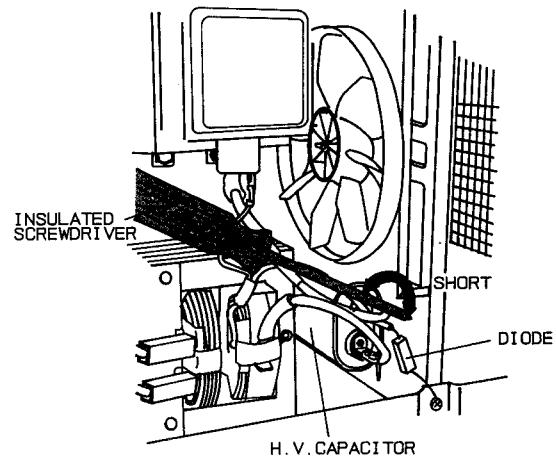
WARNING

When the 15 Amp. fuse is blown due to the operation of short switch, you must replace power relay B, latch switch B and short switch. For NE-8070C, NE-7970C replace only latch switch B and short switch.

(A) This is mandatory. Refer to page 34 for the necessary adjustments for these switches.
(B) When replacing the fuse, confirm that it has the appropriate rating for these models.
(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise, deficient in their ability to hold the switches.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.



Touch chassis side first then short to the high voltage capacitor terminal.

Fig. 15

6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for microwave energy leakage, (Refer to procedure for measuring microwave energy leakage on page 35).

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Replacement of the magnetron

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

Removal of Positive Lock connector

The positive lock connector is a specially designed loose free connector and you will find this connector in many lead wire connections. To remove this connector, pull the lead wire by pressing an extruded lever in the center of receptacle terminal as shown in **Fig. 16.**

(A) Discharge the high voltage capacitor. (See page 29)
(B) Remove 2 screws holding the reinforcement bracket.
(C) Remove 2 screws holding thermal cutout.
(D) Remove 1 screw holding air guide A.
(E) Remove 2 high voltage leads from filament terminals.
(F) Remove 4 nuts holding the magnetron.

NOTE: To prevent microwave leakage, tighten mounting nuts properly making sure there is no gap between the waveguide and the magnetron.

CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire from high voltage capacitor should be connected to "FA terminal". (See **Fig. 17**)

2. Replacement of the fan motor (See Fig. 17)

(A) Remove the magnetron.
(B) Disconnect 2 lead wires connected to the fan motor.
(C) Remove fan blade from the fan motor shaft.
(D) Remove 2 screws holding the fan motor.

3. Replacement of the digital programmer circuit (D.P.C.).

NOTE: Be sure to ground any static electric charge built up in your body, before handling the D.P.C..

(A) Unplug the 3-pin connector (CN5) from the D.P.C..
Caution when removing connector CN5
This connector is a special type which may be very hard to remove just by pulling directly outward. Instead it can be removed easily by simply grasping it by the ends and rocking it side to side while pulling. (See **Fig. 18**)
(B) Disconnect 8-pin (CN3) and 7-pin (CN2) connectors from the D.P.C.. (**Fig. 18**)
(C) Disconnect all lead wires from the power relay A and B. (**Fig. 18**)
(D) Remove 2 screws holding the escutcheon base. (**Fig. 18**)
(E) Release CN4 connector's lid of the D.P.C. and pull off the flat cable of the membrane switch. (**Fig. 19**)
(F) Remove 2 screws holding the D.P.C.. (**Fig. 19**)
(G) When replacing membrane switch, remove 4 screws holding escutcheon bracket and detach the escutcheon bracket from escutcheon base.

4. Replacement of the power relay A

(A) Using solder wick or a desoldering food, carefully, remove all solder from the terminal pins of the power relay A.

NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on P.C. Board contacts.

(B) With all the terminal pins cleaned and separated from P.C. Board contacts, remove the defective power relay and install new power relay making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

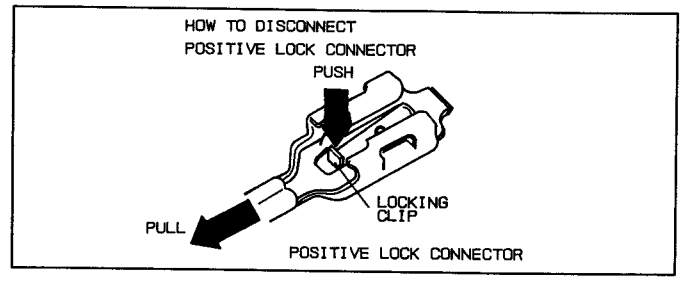


Fig. 16

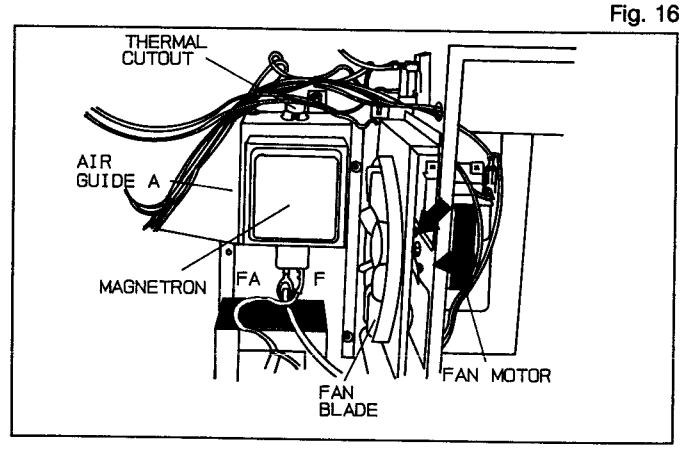


Fig. 17

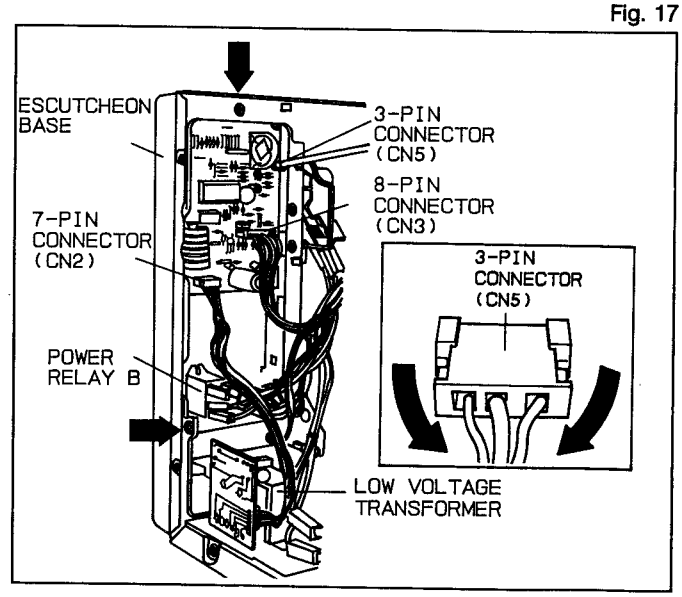


Fig. 18

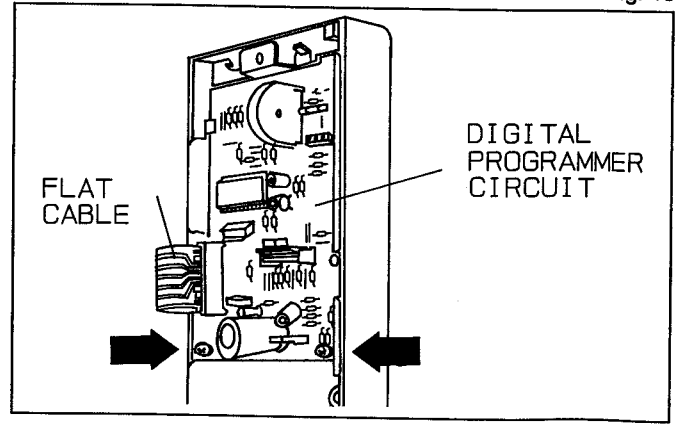


Fig. 19

4. Disassembly and replacement of the door assembly.

(A) Remove 2 bolts holding the upper hinge to the oven.
(B) Open the door and while pulling the door toward you, work the upper hinge out through the hole in the oven.
NOTE: Do not lose spacer at the bottom hinge.
(C) Remove 4 screws holding the door C. (**Fig. 21**)
(D) Remove the door C by carefully pulling outward starting from the upper right hand corner.
(E) Separate the door A from door E by carefully freeing the 8 catch hooks on door A while pulling outward. (See **Fig. 23**)
(F) Remove door keys, door key lever, door key spring and handle pins from the door E. (**Fig. 22**)
(G) When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment. (**Fig. 25**)
Also adjust so that the door has no play between the inner door surface and oven frame. If the door is not mounted properly, microwave may leak from the clearance between the door and the oven. (**Fig. 26**)

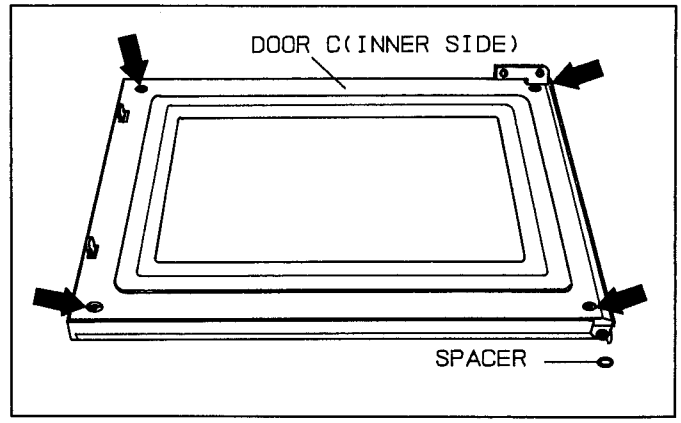


Fig. 21

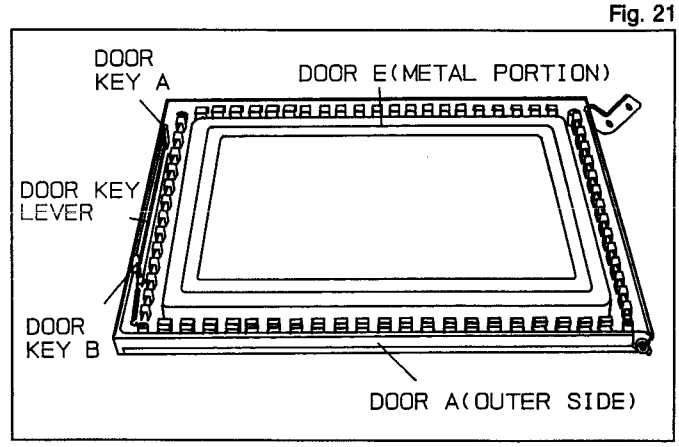


Fig. 22

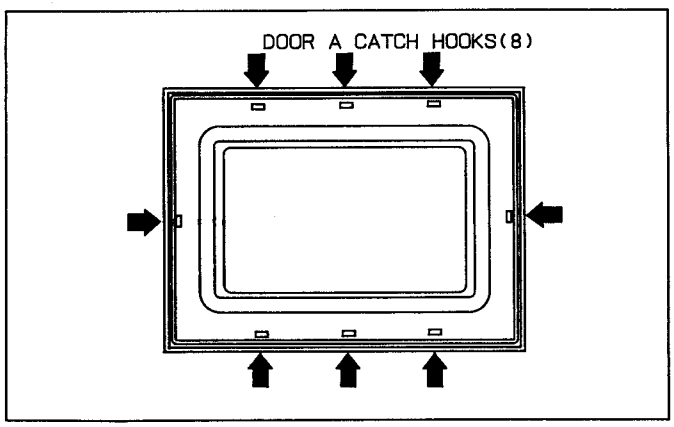


Fig. 23

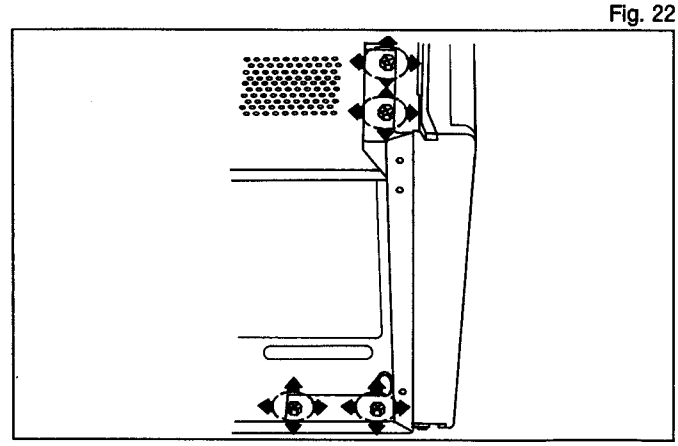


Fig. 25

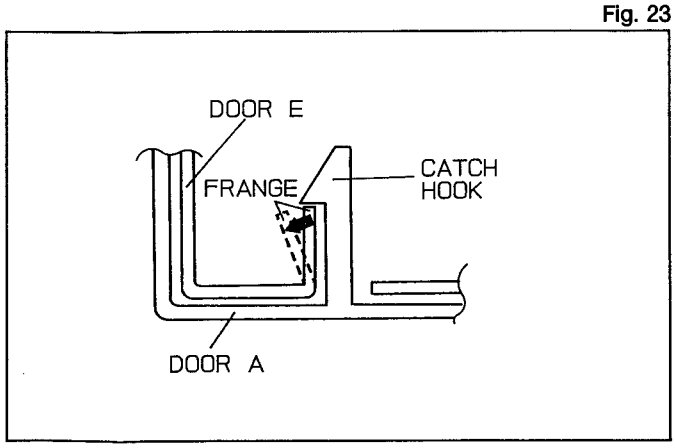


Fig. 24

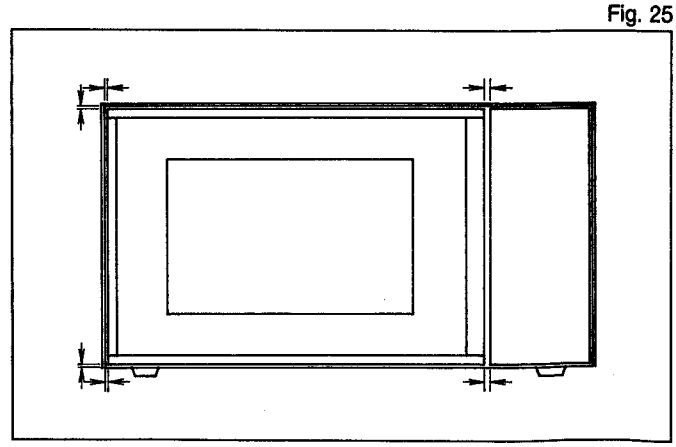


Fig. 26

COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the capacitor. (See page 29.)

1. High voltage transformer (See Fig. 27)

(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:
Secondary winding ..... Approx. 70Ω~100Ω
Filament winding ..... Approx. 0Ω
Primary winding ..... Approx. 0Ω~ 1Ω

2. High voltage capacitor

(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

3. Diode

(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred kΩ in the other direction.

4. Magnetron (See Fig. 28)

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.

5. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by pressing an appropriate pad on the key board.
The contacts assignment of the respective pads on the key board is as shown in **Fig. 29.**

NOTE: When checking continuity, use at least X 1000 range on ohmmeter as normal contacts resistance reads approximately 10 to 50 kiloohms.

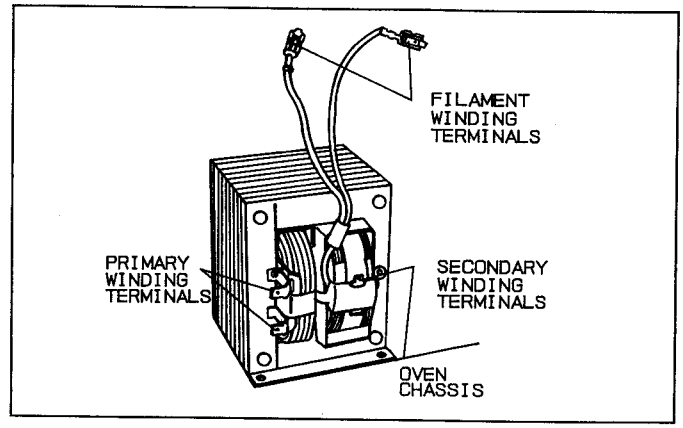


Fig. 27

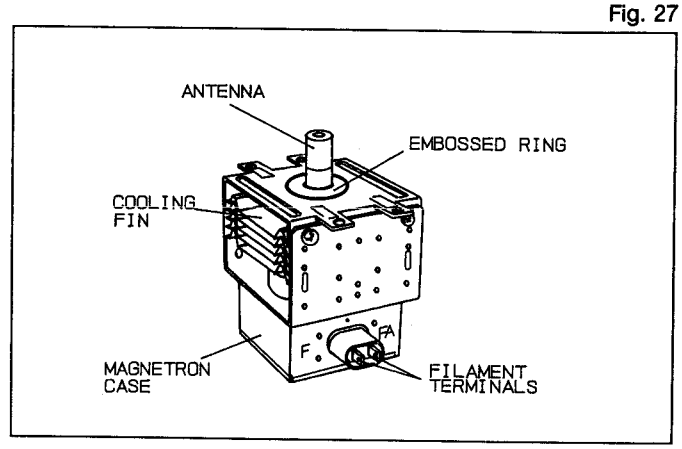
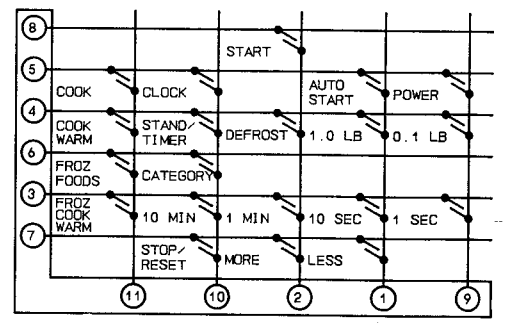


Fig. 28

NE-8070, NE-8070C



NE-7970, NE-7970C

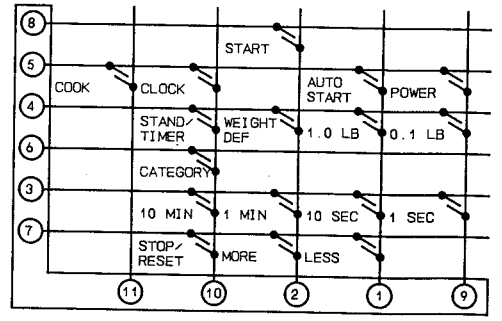


Fig. 29

7. Humidity sensor and digital programmer circuit (See Fig. 30)

CAUTION

Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
Always ground yourself while working on this panel to discharge any static charge built up in your body.

(A) Check across sensor heater terminals with 8-pin connector (CN3) unplagged. Normal cold resistance should read approx. 6 ohm.
(B) In order to determine if the Insta-Matic cooking function of the digital programmer circuit is in working order or not, do the following test.
1) Place a water load in the oven.
2) Unsolder 2 shielded wires connected to sensor terminals.
3) Tap Insta-Matic Cook Control Pad once to set Insta-Matic cooking at A1 and tap Start Pad
4) About 10 seconds after Start Pad is tapped, short shielded wires for 5 seconds and then remove them. Before shorting the shielded wires you can watch the sensor heater glow red.
5) The oven lamp will dim a little, about 50 seconds after the Start Pad is tapped. This indicates that magnetron has started oscillation.
6) 20 seconds after magnetron oscillation, short the shielded wires again. The oven should turn off automatically when the shielded wires are shorted.

The Insta-Matic cooking function in the digital programmer circuit is in working order if above condition is obtained.

8. Low voltage transformer

Check the voltage of secondary winding of the low voltage transformer (L.V.T.). The normal voltages of the L.V.T. with no load should read as shown in **Fig. 31**.
When measuring the voltage of L.V.T., measure the voltage between each pin of the L.V.T. with the connector (CN2) unplugged.

CAUTION

A 120V AC is present at the primary circuit of the low voltage transformer. When checking the secondary voltage of low voltage transformer, be cautious of possible shock hazard.

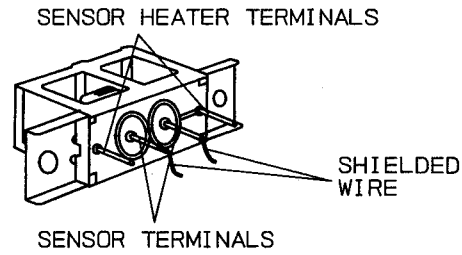


Fig. 30

PIN NO. OF L.V.T	SECONDARY VOLTAGE
S5 - S6	AC 2.82V ± 10%
S1 / S3 - S4	AC 17.5V ± 10%
S1 / S3 - S2	AC 16.4V ± 10%

PRIMARY VOLTAGE···AC120V

Fig. 31

MEASUREMENTS AND ADJUSTMENTS

WARNING

For continued protection against radiation hazard, replace only with identical replacement parts (Part No. ANE6142-F60, Type No. V-15G-3C26 for latch switch B and Part No. ANE6178-F80, Type No. V-15-2C25 for short switch).
When the 15 Amp. fuse is blown due to the operation of short switch, you must replace power relay B, latch switch B (power relay B is not needed for NE-8070C and NE-7970C) and short switch then follow the adjustment procedures below.
Interlock switch replacement — In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise, deficient in their ability to hold the switches.

1. Adjustment of latch switch A

(A) Mount the latch switch A to the door hook A as shown in **Fig. 32**.
NOTE: **No specific adjustment during installation of latch switch A to the door hook A is necessary.**
(B) When mounting the door hook A assembly to the oven assembly, be sure to adjust the door hook A assembly by moving in the arrow direction so that the oven door will not have any play in it. **(Fig. 33)**
Check for play in the door by pulling on the door.
Make sure that the latch key positions correctly during adjustment. Also make sure that the latch key moves smoothly after adjustment is completed. Completely tighten the screws holding the door hook A assembly to the oven assembly.

2. Adjustment of latch switch B and short switch.

(A) Mount the latch switch B and the short switch to the door hook B as shown in **Fig. 34**.
NOTE: **No specific adjustment during installation of latch switch B and the short switch to the door hook B is necessary.**
(B) When mounting the door hook B assembly to the oven assembly, adjust the door hook B assembly by moving it in the direction of arrow in **Fig. 33** so that the oven door will not have any play in it.
Check for play in the door by pulling on the door.
Make sure that the latch key moves smoothly after adjustment is completed. Completely tighten the screws holding the door hook B assembly to the oven assembly.

3. Measurement of microwave output

The power output of the magnetron can be measured by performing a simple water temperature rise test.
Equipment needed for the Test:
*Two 1 liter beakers
*One glass thermometer
NOTE: **Check the line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.**
(A) Fill the two 1 liter beakers with water and mark one A and one B.
(B) Stir the water in each beaker with the thermometer and record each beaker's temperature:
Beaker A's temperature = T1A
Beaker B's temperature = T1B
(C) The average value (T1) of T1A and T1B is calculated as follows:

$$T1 = \frac{T1A + T1B}{2}$$

(D) Place both beakers on the center of the glass cook plate.
Set the oven for High power and set two minutes. Heat the water for exactly two minutes.
(E) When heating is finished, stir the water again with the thermometer and measure the temperature rises as T2A and T2B.
(F) The average value (T2) of T2A and T2B is calculated as follows:

$$T2 = \frac{T2A + T2B}{2}$$

(G) Subtract T1 from T2. This will give you the temperature rise.
(H) The normal temperature rise for this model is 16° to 20°F (8.9° to 11°C) at the "High" power selection when operated at the specified line voltage.
*If no temperature rise is noted, refer to the "TROUBLESHOOTING GUIDE".
NOTE: **In order to determine (not to measure the output power) if oven oscillates normally or not, you may conduct this test by heating one liter water for one minute. In this case, the temperature rise will be small due to microwave characteristics but should be over 13.5°F. (7.5°C.)**

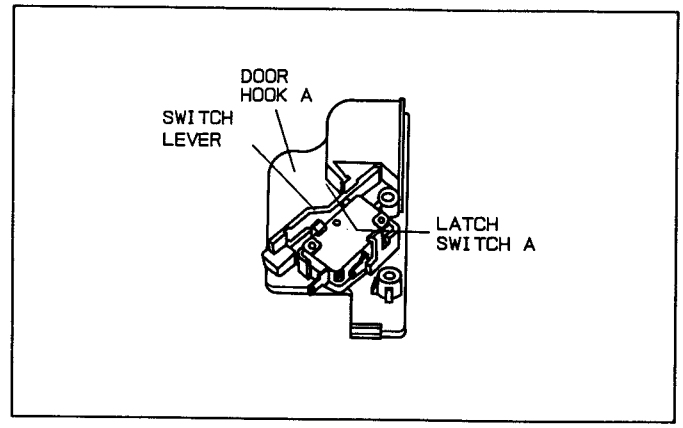
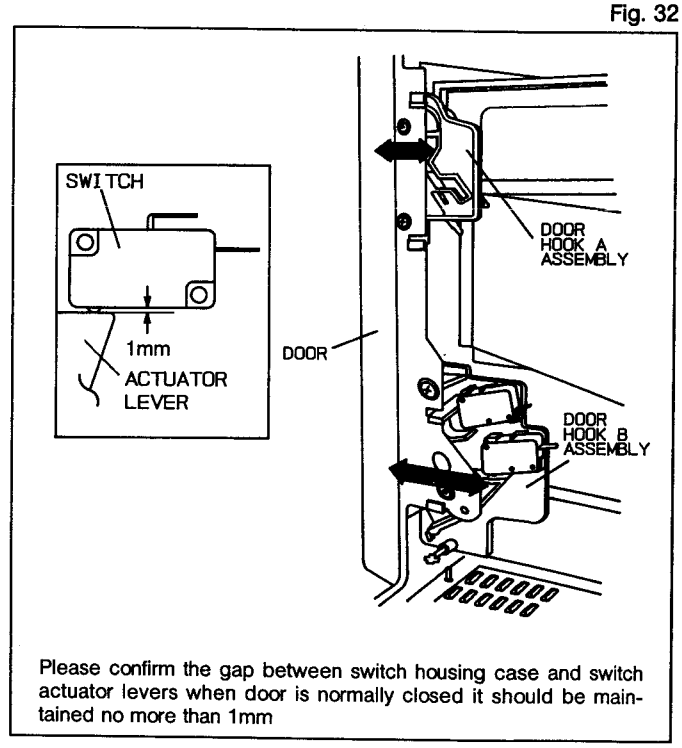


Fig. 32



Please confirm the gap between switch housing case and switch actuator levers when door is normally closed it should be maintained no more than 1mm

Fig. 33

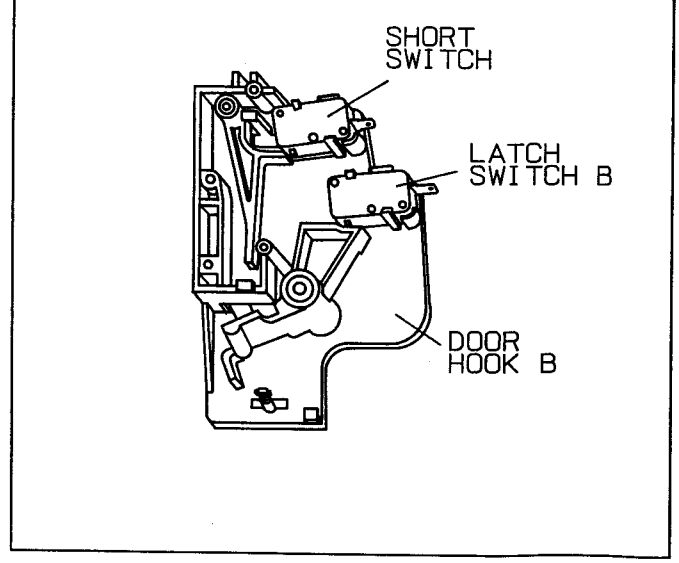


Fig. 34

PROCEDURE FOR MEASURING RADIATION LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mw/cm² (1mw/cm² for Canada) inform the Panasonic Co. (MESCO, PHI, PSC, or MELCA) immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S and NHW regulation. This required must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5 mw/cm² while in the customer's home. 2mw/cm² stated here is Panasonic's own voluntary standard. (1 mw/cm² for Canada)

1. Equipment

*Electromagnetic radiation monitor
*Glass thermometer 212°F or 100°C
*600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in ***Fig. 35*** *no faster than 1 inch/sec (2.5 cm/sec)*
(3) Leakage with the outer panel removed·····less than 5mw/cm²
(4) Leakage for a fully assembled oven with door normally closed····less than 2mw/cm² (1mw/cm² for Canada)
(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while lightly pressing the door release lever·····less than 2mw/cm²

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20 ± 5°C (68 ± 9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
(C) When measuring the leakage, always use the 2 inch (5 cm) spacer supplied with the probe.
(D) Tap the start pad and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron. (**Fig. 36**)

WARNING

Avoid contacting any high voltage parts.

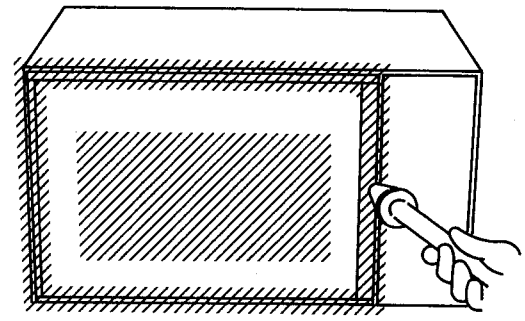
(2) Measurements with a fully assembled oven.

After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

(A) After any adjustment or repair to a microwave oven a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.
(B) Should the radiation leakage be more than 2 mw/cm² (1mw/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the PANASONIC CO. (MESCO, PHI, PSC or MELCA).

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.



MOVE PROBE ALONG SHADED AREA (////) AROUND EXHAUST OPENINGS (as shown) AND AROUND AIR INLET OPENING

Fig. 35

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

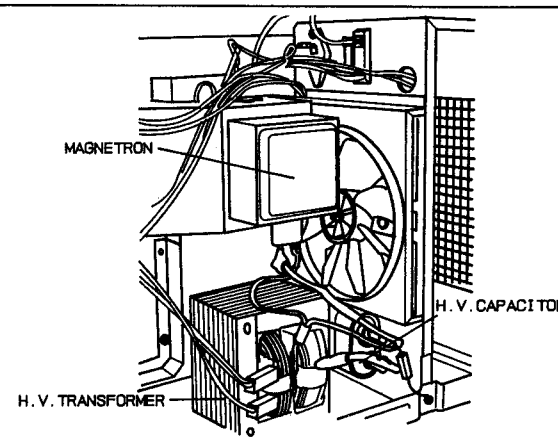


Fig. 36

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor. (See page 29)
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.

First of all operate the microwave oven following the correct operating procedures described on pages 3 ~ 21 in order to find the exact cause of any trouble.

[TROUBLE 1] The following visual conditions indicate a probable defective digital programmer circuit (D.P.C.) or membrane key board (membrane switch assembly).

A. In case of following conditions, D.P.C. is defective.

1. Incomplete segments.
   (A) Segments missing.
   (B) Partial segments missing.
   (C) Digit flickering other than normal fluorescent slight flickering.
   (D) Colon does not turn on or does not blink when the clock pad is tapped.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display not on when they should be.
4. Wrong or no power indicator light for power level selected.
5. Specific numbers (for example 2 or 3) will not display.
6. Display does not count down with time cooking or when using display as a timer.
7. Display does not count up with clock operation.
8. Oven is programmable and cooks normally but no display shows.
9. Display obviously jumps in time while counting down or up.
10. Display counts down noticeably too fast while cooking.
11. Display cannot shift from the first stage cooking to the second stage cooking even though Two Stage Cooking is programmed.
12. Display does not stop counting down with time cooking even when Stop/Reset Pad is tapped.
13. Time of day does not reappear when cooking is finished.

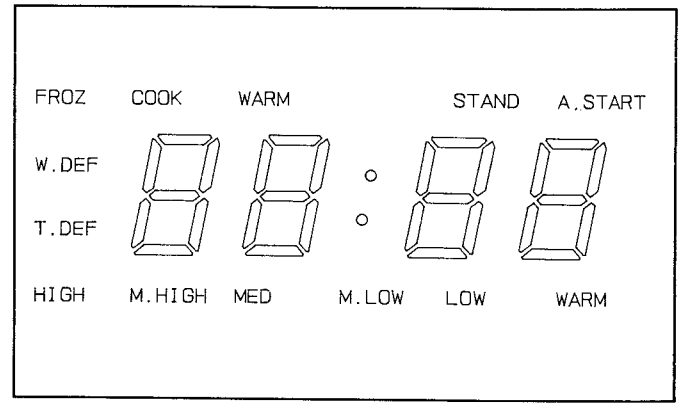


Fig. 37

B. In case of following conditions, either D.P.C. or membrane switch is defective.

CHECK	RESULT	CAUSE	REMEDY
1. Clock set cannot be programmed at all.			
Check continuity of membrane switch (between terminals 5 and 10) with clock pad tapped	No continuity	Defective membrane switch	Replace
	Continuity	Defective DPC	Replace
2. Some inputs cannot be programmed.			
Check continuity of membrane switch (refer to page 32 for the test procedures of membrane switch)	Some pads have no continuity	Defective membrane switch	Replace
	Normal	Defective DPC	Replace
3. Display indicates a number or figure different from one touched. Random programming when pressing other than touch pads or without pressing any at all. (intermittently)			
Replace membrane switch and recheck	Everything works as specified	Defective membrane switch	Replace
	Still have trouble	Defective DPC	Replace

[TROUBLE 2] Oven does not operate at all; Display window does not display any figures and no key in of any pads will be accepted.

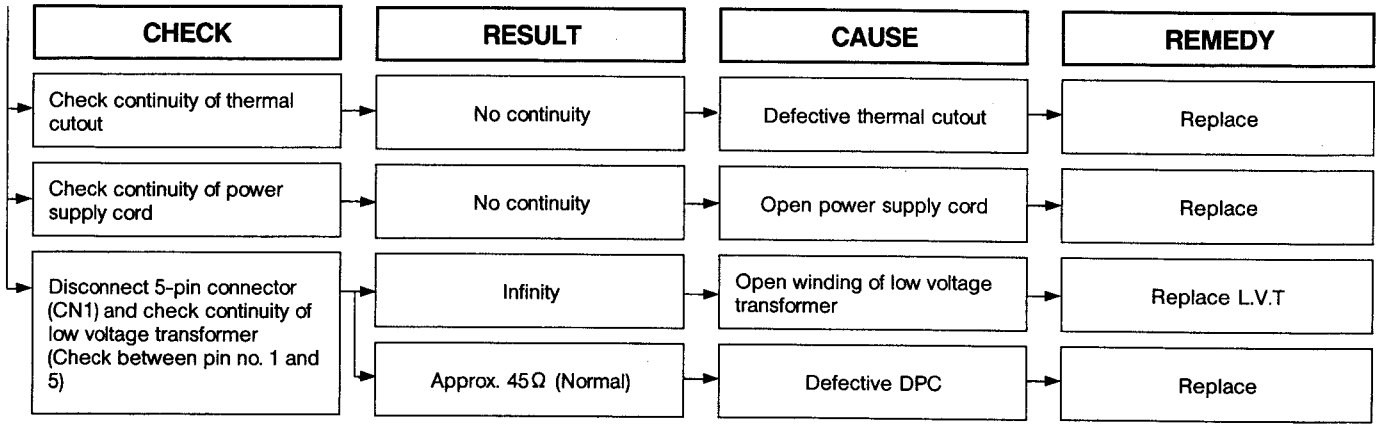
1. 15A fuse blows (For NE-8070, NE-7970)

CHECK	RESULT	CAUSE	REMEDY
Check continuity of short switch with door closed	Continuity	Shorted contacts of short switch	Replace power relay B, latch switch B (secondary) and short switch
	No continuity		
(Replace 15A fuse)			
Check continuity of power relay B's contacts and latch switch B's contacts with door partially open until short switch contacts close	Both continuity	Shorted contacts of latch switch B and power relay B	NOTE: All these switches and power relay B must be replaced at the same time (refer to page 34 for adjustment instructions.)
	One has continuity and the other does not	Shorted contacts of power relay B and incorrect operation of latch switch B	
	Both no continuity		
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the unit.	Normal	Defective high voltage capacitor	Replace
	15A fuse again blows	Defective high voltage transformer	Replace

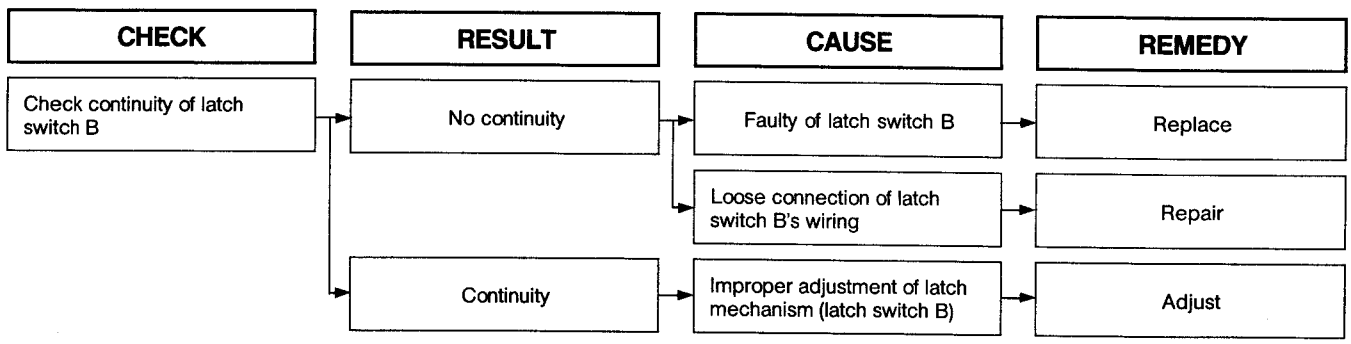
1". 15A fuse blows (For NE-8070C, NE-7970C)

CHECK	RESULT	CAUSE	REMEDY
Check continuity of short switch with door closed	Continuity	Shorted contacts of short switch	Replace latch switch B (secondary) and short switch
	No continuity		
(Replace 15A fuse)			
Check continuity of latch switch B's contacts with door partially open until short switch contacts close	Continuity	Shorted contacts of latch switch B	NOTE: All these switches must be replaced at the same time (refer to page 34 for adjustment instructions.)
	No continuity		
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the unit.	Normal	Defective high voltage capacitor	Replace
	15A fuse again blows	Defective high voltage transformer	Replace

2. Outlet has proper voltage. Fuse is not open.



[TROUBLE 3] Display shows all figures selected, but oven does not start cooking even though desired program and time are set and start pad is tapped.
(Cooking time counts down and oven lamp turns on.)



[TROUBLE 4] No microwave oscillation even though fan motor and turntable rotate.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being supplied to power relay B coil (NOTE 1)	0V	Defective digital programmer circuit	Replace
	Normal	Faulty contacts of power relay B or open relay coil	Replace
		Open lead wire (Ref. No. W3) (Refer to figure WIRING MATERIAL on page 46) (NOTE 2)	Replace lead wire (Ref No. W3) and also magnetron
		Open winding of high voltage transformer or faulty insulation of filament winding (NOTE 3)	Replace
		Shorted diode (NOTE 3)	Replace
		Faulty magnetron (NOTE 3)	Replace

NOTE 1: Disconnect two lead wires connected to the power relay B coil.
Set power at High and set any time.
Normal digital programmer circuit should read approx. 18V DC continuously.

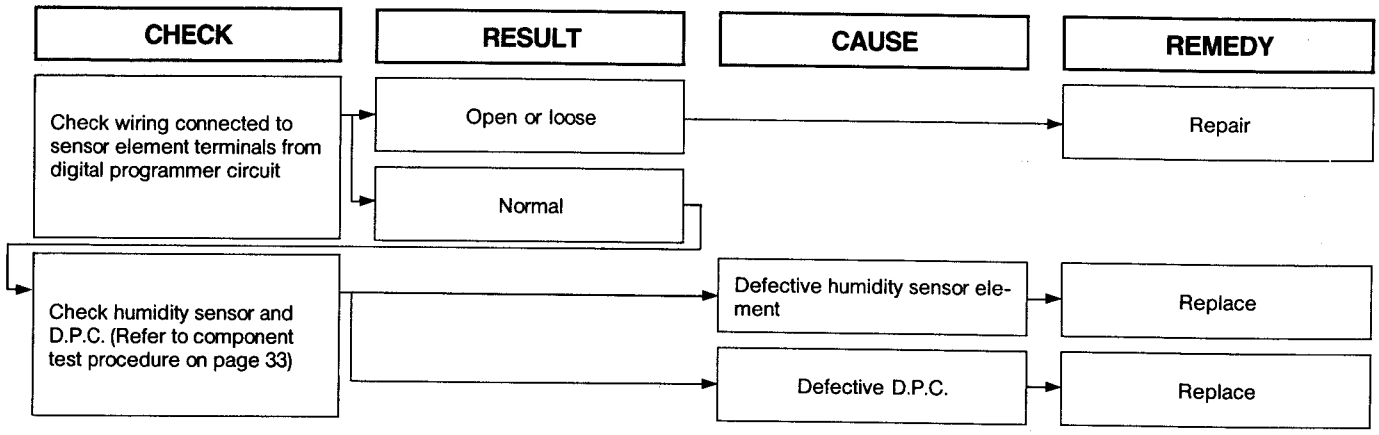
NOTE 2: Unlike previous models, no protector is provided on lead wire W3.
When magnetron filament is short-circuited, this W3 lead wire will be burnt and act as a protector.
When this lead wire is open, replace together with magnetron.

NOTE 3: Refer to component test procedure on page 32.

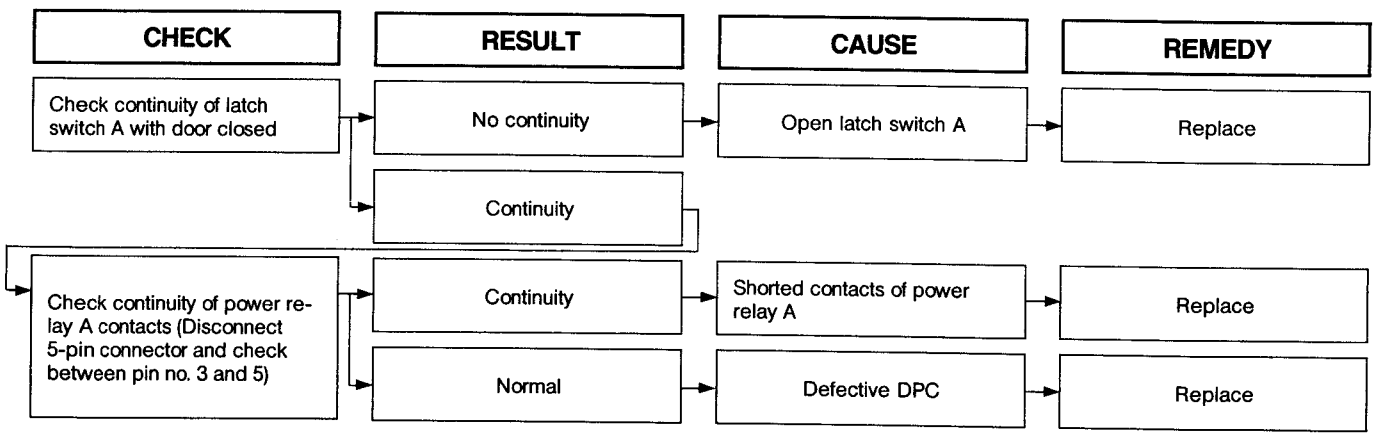
[TROUBLE 5] Microwave output power is low. First of all, check if output is really low by following "Measurement of microwave output" on page 34.

CHECK	RESULT	CAUSE	REMEDY
Check the power source voltage with magnetron oscillating.	Lower than 105 volts	Decrease in power source voltage	Customer education
	Normal		
Check the timing periods of the 18V DC being applied to the power relay B coil (refer to page 26 for the timing periods of the power relay B)	Abnormal	Defective digital programmer circuit	Replace
	Normal	Aging change of magnetron	Replace depending on the result of output test

[TROUBLE 6] Microwave oven does not operate normally, when auto sensor cooking is selceted.



[TROUBLE 7] Oven lamp and fan motor turn on when power supply cord is plugged into wall receptacle.



[TROUBLE 8] Magnetron oscillates for 2-4 minutes after start pad is tapped, then stops all functions of the oven. (oven lamp, fan motor and turntable motor do not turn on.)

REASON: During first 2~4 minutes, magnetron is oscillates but the fan motor does not rotate, this causing the magnetron to heat up and open the magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being applied to power relay A coil (NOTE 4)	Approx. 18V DC	Faulty contacts of power relay A or open relay coil	Replace power relay A (on the mini PCB)
	0V	Defective DPC	Replace

NOTE 4: When checking DC voltage, check between coil terminals of power relay A with door opened.

[TROUBLE 9] Magnetron oscillates for 2-4 minutes after power supply cord is plugged into wall receptacle, then stops all functions of the oven. Then about 7-15 minutes later, magnetron oscillates again.

REASON: During first 2~4 minutes, magnetron is oscillates but the fan motor does not rotate, this causing the magnetron to heat up and open the magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

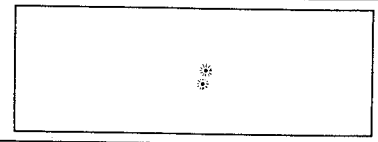
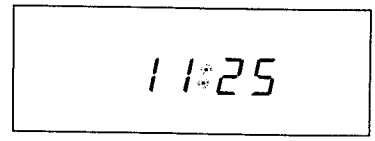
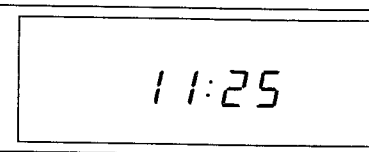
CHECK	RESULT	CAUSE	REMEDY
Check continuity of power relay B contacts	Continuity	Shorted contacts of power relay B	Replace
	No continuity	Defective DPC	Replace

[TROUBLE 10] Oven lamp, fan motor and turntable motor turn on when door is opened. (NE-8070, NE-7970)

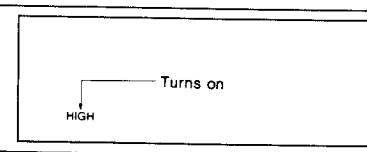
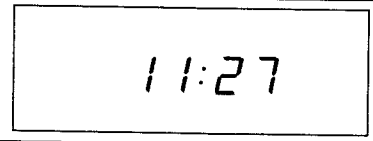
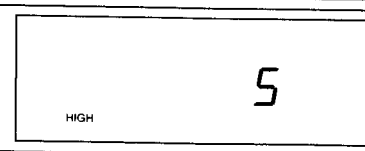
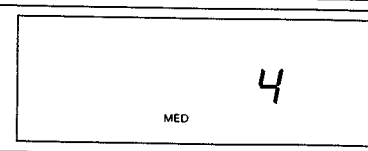
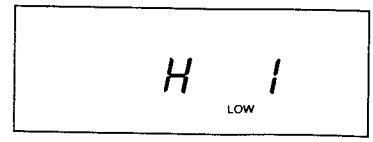
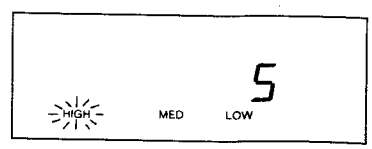
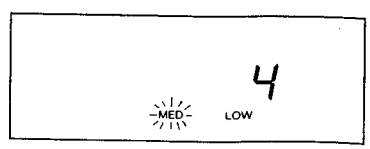
CHECK	RESULT	CAUSE	REMEDY
Check continuity of latch switch B with door opened	Continuity	Shorted contacts of latch switch B	Replace

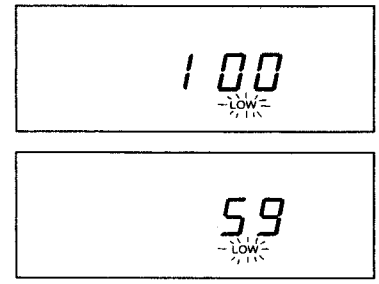
DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

1. To Set Clock

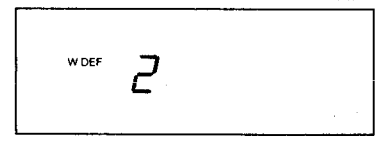
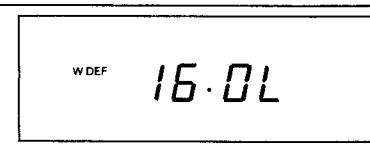
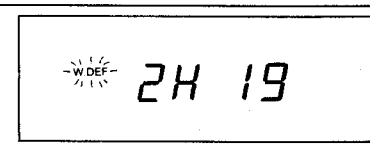
STEP	OPERATION	FUNCTION	DISPLAY
1	Plug the power supply cable into wall receptacle.	• Colon starts blinking.	
2	Enter time of day (TOD) by tapping appropriate number pads. Example : To Set 11 : 25 • Tap 10 min pad once • Tap 1 min pad once • Tap 10 sec pad twice • Tap 1 sec pad 5 times	• Numbers tapped are displayed in the display window. • Colon keeps blinking.	
3	Tap Clock Pad.	• Colon stops blinking and stays on. • TOD has now been registered into the digital programmer circuit and will count up by minutes.	

2. Time Cooking/Three Stage Cooking

STEP	OPERATION	FUNCTION	DISPLAY
1	Place a water load in the oven.		
2	Tap Power Pad.(Example : Tap power select pad once for high power setting.)	• Clock time disappears. • HIGH power indicator light turns on.	
3	Tap Stop/Reset Pad.	• The display window will show TOD again.	
4	Select HIGH power and set for 5 seconds by tapping the appropriate pads. (1st stage)	• Clock time disappears. • HIGH Power indicator light turns on. • Display window shows "5".	
5	Set MED power for 4 seconds. (2nd stage)	• First stage cooking time "5" and HIGH power indicator light disappear. • Oven beeps 2 tims. • MED power indicator light turns on. • Display window shows "4".	
6	Set LOW power for 1 minute. (3rd stage) Tap Power Select Pad 5 times and [1] second pad once.	• Second stage cooking time "4" and MED power indicator light disappear. • Oven beeps 2 tims. • LOW power indicator light turns on. • Display window shows "H 1". **NOTE: When LOW power is selected, H meaning Hour appears in display window and cooking time is shown in hours and minutes.**	
7	Tap Start Pad. (1st stage)	• Oven light turns on. • Microwave activity starts. • Third stage cooking time disappears. • LOW power indicator light stays on. • HIGH and MED power indicator lights turn on. • Turntable begins to rotate. • First stage cooking time "5" appears and counts down by seconds. • HIGH (1st stage) power indicator light begins to blink.	
8	(2nd stage)	• After completing 1st stage program, oven automatically switches to 2nd stage. • HIGH (1st stage) power indicator light turns off. • MED (2nd stage) power indicator light starts to blink. • LOW (3rd stage) power indicator light remains on. • Display window indicates "4" and starts counting down by seconds.	

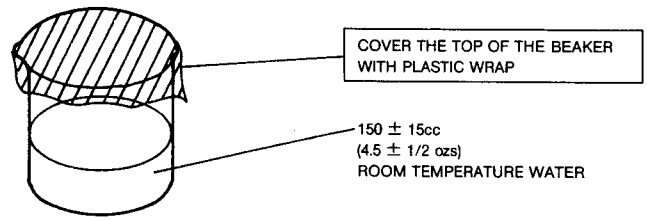
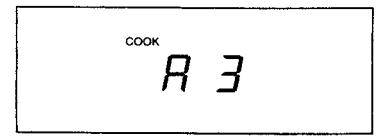
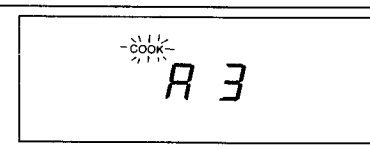
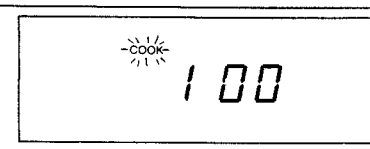
STEP	OPERATION	FUNCTION	DISPLAY
9	(3rd stage)	• After completing 2nd stage program, oven automatically switches to 3rd stage. • MED (2nd stage) power indicator light turns off. • LOW (3rd stage) power indicator light starts to blink. • Display indicates "1 00" and starts counting down by seconds.	
10	When third stage cooking ends, oven beeps five times and shuts off automatically.		• TOD appears in display window.

3. Auto Weight Defrost

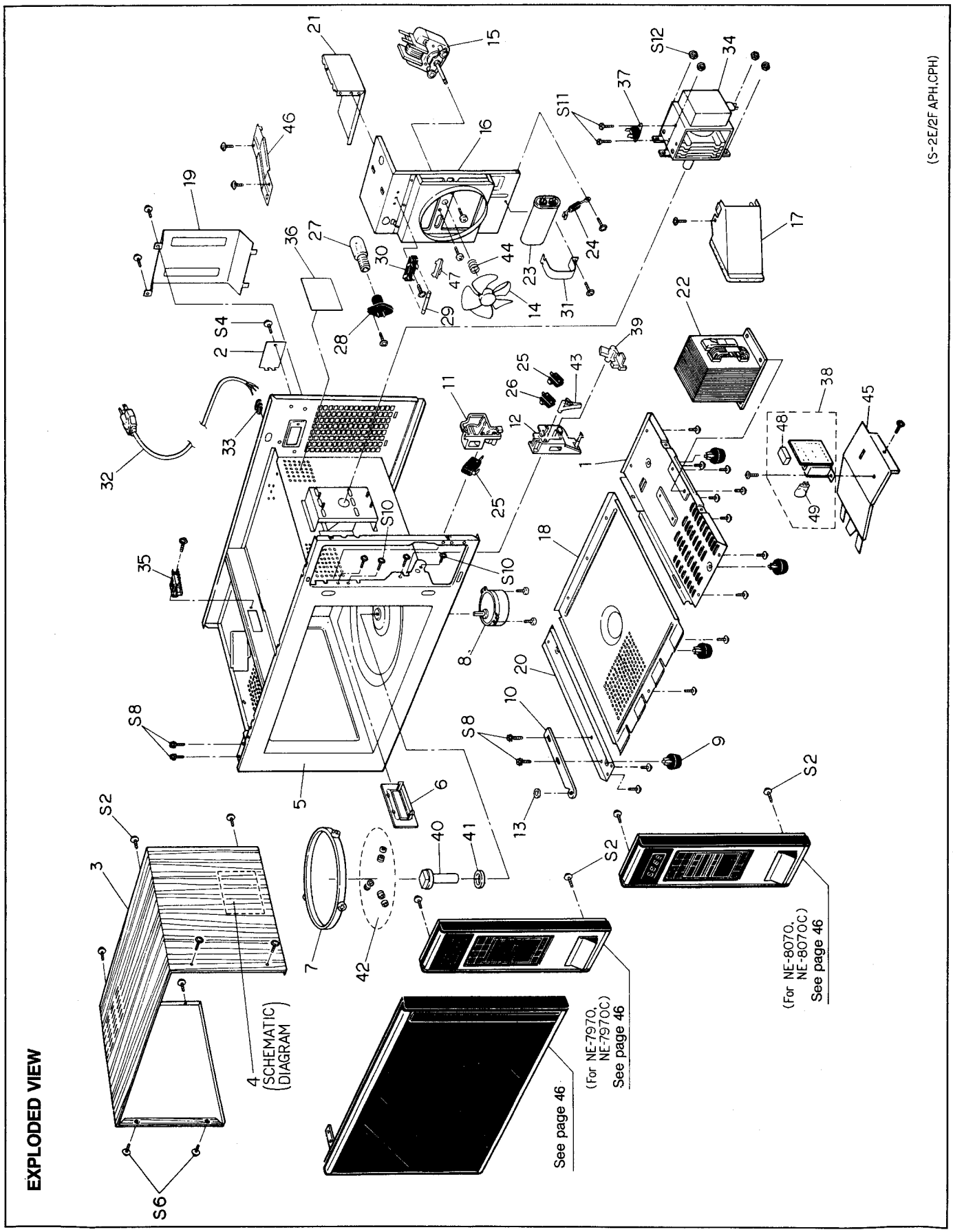
STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Defrost Category Pad 2 times to select Defrost Category 2.	• Clock time disappears. • Category number "2" appears in the display window. • Auto Weight Defrost indicator light turns on.	
2	Set the weight for 16 pounds by tapping 1.0 (lb) pad 16 times.	• Category number "2" disappears and the weight selected appears in the display window.	
3	Tap Start Pad.	• Oven light turns on. • Microwave defrosting begins. • Auto Weight Defrost indicator light begins to blink. • Turntable begins to rotate. • Weight in display window disappears. • Defrosting time "2H 19" appears and counts down.	
4	Tap Stop/Reset Pad 2 times.	• Oven shuts off. • The display window will show TOD again.	

4. Auto Sensor Cooking

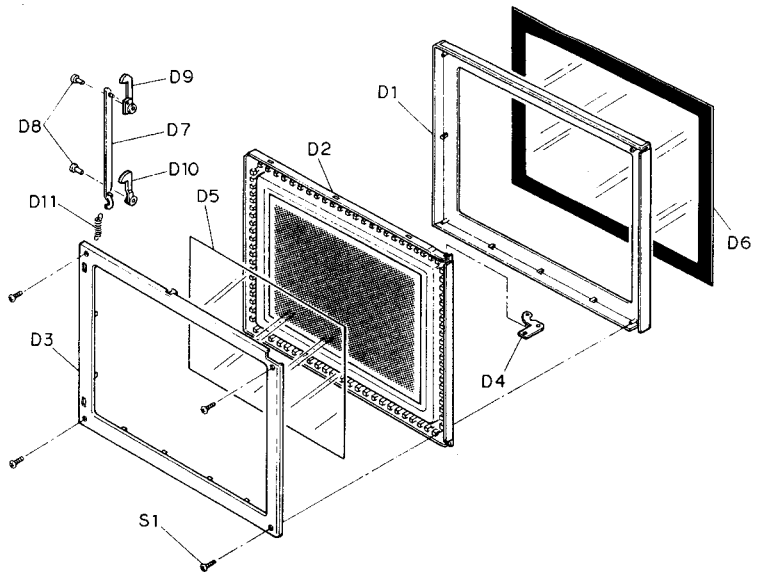
NOTE: Make sure that the outer panel is installed before Auto Sensor Cooking Test, since Auto Sensor function does not operate properly without the outer panel.

STEP	OPERATION	FUNCTION	DISPLAY
1	Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water in a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.		
2	Tap Auto Sensor Cook Pad 3 times.	• Clock time disappears. • "A3" appears in display window. • Auto Sensor "Cook" indicator light turns on.	
3	Tap Start Pad.	• Auto Sensor "Cook" indicator light starts to blink. • Oven lamp turns on. • Fan motor and turntable start rotating. • Oven lamp will dim a little, about 50 seconds after Start Pad is tapped. This indicates that magnetron has started oscillation.	
	The humidity sensor detects steam about 2 to 4 minutes after the Start Pad is tapped. Auto Sensor Cooking (T1) automatically switches to time cooking (T2). "A3" disappeares with beep sounds and the remainder of cooking time appears in display window. NOTE: **Cooking time will vary depending on the water temperature, the shape of beaker or the power source voltage.**	• Auto Sensor Cooking automatically switches to time cooking. • "A3" disappears, two beeps sound, and 1 00 to 3 00 (1 minute to 3 minutes) appears in the display window as balance of cooking time.	
		• When the balance of cooking time has elapsed, oven stops and beeps five times. • Auto Sensor "Cook" indicator light and oven lamp turn off. • TOD reappears in the display window. • Finally check to make sure if TOD is correct.	

EXPLODED VIEW AND PARTS LIST

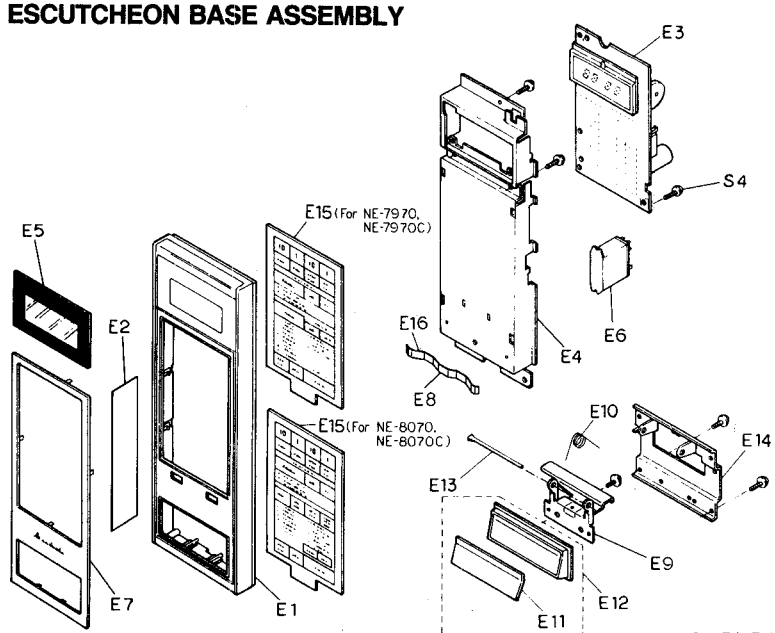


DOOR ASSEMBLY



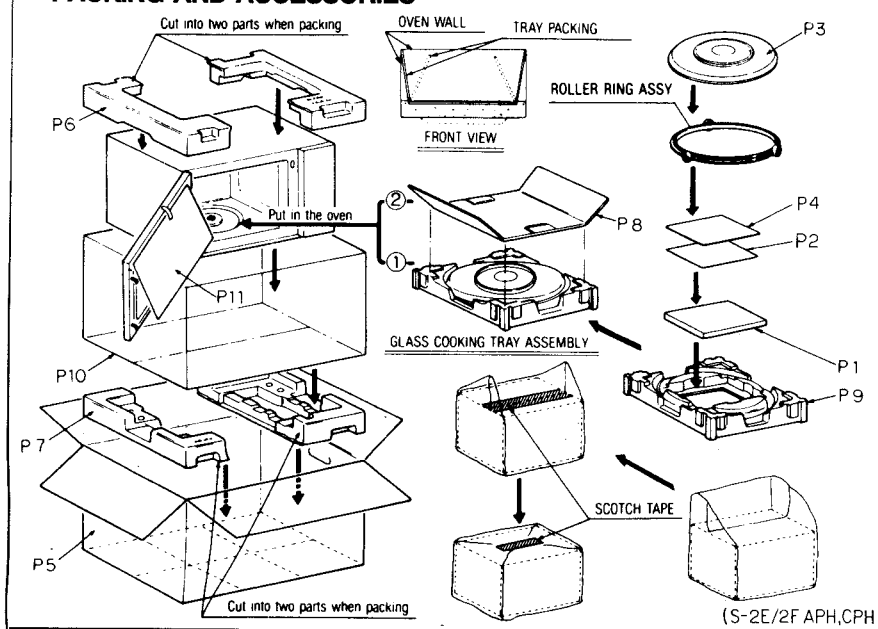
(S-2E/2F APH.CPH)

ESCUTCHEON BASE ASSEMBLY



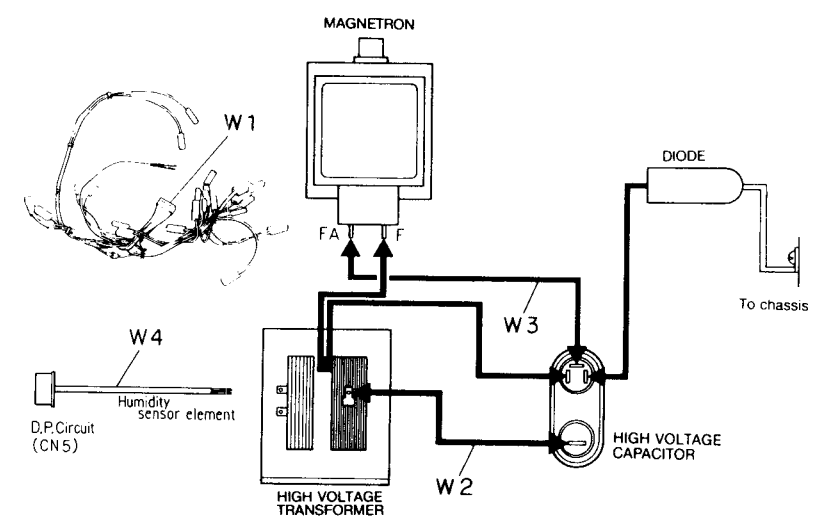
(S-2E/2F APH.CPH)

PACKING AND ACCESSORIES



(S-2E/2F APH.CPH)

WIRING MATERIAL



(S-2E/2F APH.CPH)

PARTS LIST (NE-7970, NE-7970C, NE-8070, NE-8070C)

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this parts list. Do not use description of the part.
2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		ANE110EX00AQ	Base assy	1	
2		ANE1060X00AP	Lamp cover assy	1	
3		ANE1009X00AP	Outer panel	1	NOTE 3
4		ANE00012E0AP	Schematic diagram	1	For NE-7970, NE-8070
		ANE00012E0CP	Schematic diagram	1	For NE-7970C, NE-8070C
5	⚠	ANE200A2E0AP	Oven assy	1	
6		ANE2055X00AP	Cover A	1	
7		ANE290DX00AP	Roller ring assy	1	
8		ANE6326X00AP	Turntable motor	1	(4W)
9		ANE1008B00SS	Rubber foot	4	
10	⚠	ANE3007X00AP	Lower hinge	1	
11	⚠	ANE3020B00AP	Door hook A	1	
12	⚠	ANE32672A0AP	Door hook B	1	
13		ANE3081B60AP	Door hinge spacer	1	
14		ANE4008X00AP	Fan	1	
15		ANE400AX00AP	Fan motor	1	(25W)
16		ANE400RX00AP	Fan motor bracket B	1	
17		ANE4025X00AP	Air guide A assy	1	
18		ANE1026X00AP	Base C	1	
19		ANE4030X00AP	Air guide D	1	
20		ANE1129X00AP	Base B	1	
21		ANE6073X00AP	Oven lamp cover	1	
22	⚠	ANE600BX00AP	H.V.Transformer	1	(1.5KVA)
23	⚠	ANE6090X00AP	H.V.Capacitor	1	(0.95μF, AC2100V)
24	⚠	ANE6202X00AP	Diode	1	(Si)
25	⚠	ANE6142-F60	Switch	2	Latch switch A, B (V-15G-3C26)
26	⚠	ANE6178-F80	Switch	1	Short switch (V-15-2C25)
27		ANE6030540AP	Oven lamp	1	(125V, 20W)
28		ANE61522A0AP	Oven lamp socket	1	
29	⚠	ANE6230B00AP	Fuse	1	(15A)
30		ANE6231-F50	Fuse holder	1	
31		ANE6037X00AP	Capacitor bracket	1	
32		ANE900CX00AP	Power supply cord	1	For NE-7970, NE-8070
		ANE900CX00CP	Power supply cord	1	For NE-7970C, NE-8070C
33		ANE9027570XN	Cord bushing	1	
34	⚠	2M204-M1	Magnetron	1	
35		ANE601L-F70	Sensor element	1	
36		ANE6040B00AP	Oven lamp sheet	1	
37		ANE6145X00AP	Thermal cutout	1	
38		ANE692M2E0AP	L.V.Transformer assy	1	(ETP48J1A), (10VA)
39		ANE31372A0AP	Hook spacer B	1	
40		ANE200YX00AP	Pulley shaft	1	
41		ANE2177X00AP	Washer	1	
42		ANE202KX00AP	Roller B assy	1	NOTE 4
43		ANE31362A0AP	Hook spacer A	1	
44		ANE4057-F50	Spring	1	
45		ANE6564X40AP	Bracket	1	
46		ANE5043X00AP	Reinforce bracket	1	
47		ANE6611X00AP	Spacer	1	
48		AEAWG5R1T18	Power relay A	1	(G5R-1112P)
49		ANE604QB00AP	Varistor	1	
		ANE0887L10AP	Cavity spray paint	1	Spray can, For repair of painted oven cavity
		ANE0887970AP	Touch-up paint	1	Bottle with brush, For repair of painted oven cavity

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks

NOTE 3: Please order schematic diagram together.
4: When ordering the roller B assy, each three rollers and washers will be shipped.
When replacing the roller B, each three rollers and washers should be replaced at the same time.
Otherwise the glass cook plate may not turn smoothly.

DOOR ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
D1	⚠	ANE302AL90AP	Door A assy	1	
D2	⚠	ANE302KX00AP	Door E assy	1	
D3	⚠	ANE3085X00AP	Door C	1	
D4	⚠	ANE3006X00AP	Upper hinge	1	
D5	⚠	ANE3145X00AP	Door screen A	1	
D6		ANE3146X40AP	Door screen B	1	
D7		ANE301HX00AP	Door key lever B	1	
D8		ANE3056X00AP	Handle pin	2	
D9		ANE3018X00AP	Door key A	1	
D10		ANE3019X00AP	Door key B	1	
D11		ANE3021X00AP	Door key spring	1	

PACKING AND ACCESSORIES

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
P1		ANE000BX40AP	Cook book	1	
P2		ANE00032E0AP	Instruction book	1	For NE-7970
		ANE00032E0CP	Instruction book	1	For NE-7970C
		ANE00032F0AP	Instruction book	1	For NE-8070
		ANE00032F0CP	Instruction book	1	For NE-8070C
P3		ANE0601B00AP	Glass cooking tray	1	
P4		ANE0169B60AP	Servicenter list	1	For NE-7970, NE-8070
		ANE0169B60CP	Servicenter list	1	For NE-7970C, NE-8070C
P5		ANE01022E0AP	Outer case	1	For NE-7970
		ANE01022E0CP	Outer case	1	For NE-7970C
		ANE01022F0AP	Outer case	1	For NE-8070
		ANE01022F0CP	Outer case	1	For NE-8070C
P6, 7		ANE010AX00AP	Filler set	1	
P8		ANE0108X00AP	Tray packing	1	
P9		ANE0113X00AP	Tray styrol	1	
P10		ANE0106910AP	Vinyl cover	1	
P11		ANE0107580AP	Door sheet	1	

ESCUTCHEON BASE ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
E1		ANE80342A0AP	Escutcheon base assy	1	For NE-7970, NE-7970C NOTE 5
		ANE80342F0AP	Escutcheon base assy	1	For NE-8070, NE-8070C NOTE 5
E2		ANE00072E0AP	Name plate	1	For NE-7970
		ANE00072E0CP	Name plate	1	For NE-7970C
		ANE00072F0AP	Name plate	1	For NE-8070
		ANE00072F0CP	Name plate	1	For NE-8070C
E3		ANE603L2E0AP	D.P.Circuit assy	1	(W/Component)
E4		ANE81272A0AP	Bracket	1	
E5		ANE81262E0AP	Smoke panel	1	
E6		ANE6126X00AP	Power relay	1	(G4W-11123T-US)
E7		ANE80012A0AP	Escutcheon A	1	For NE-7970, NE-7970C
		ANE80012F0AP	Escutcheon A	1	For NE-8070, NE-8070C
E8		ANE8264X80AP	Ground metal	1	
E9		ANE8256L90AP	Door opening lever	1	
E10		ANE8194Q40AQ	Cook lever spring	1	
E11		ANE8321X00AP	Door button panel	1	
E12		ANE891PX00AP	Door opening button	1	
E13		ANE8191X00AP	Cook lever shaft	1	
E14		ANE81922A0AP	Cook lever bracket	1	
E15		ANE6479X40AP	Membrane switch	1	For NE-7970, NE-7970C
		ANE6479X50AP	Membrane switch	1	For NE-8070, NE-8070C
E16		ANE81642E0AP	Ground metal	1	

WIRING MATERIAL

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
W1		ANE030A2E0AP	Lead wire harness	1	For NE-7970, NE-8070
		ANE030A2E0CP	Lead wire harness	1	For NE-7970C, NE-8070C
W2		ANE0350X00AP	Lead wire	1	
W3		ANE0351X00AP	Lead wire	1	NOTE 6
W4		ANE0353X40AP	Shield cable	1	

NOTE 5: Please order name plate together.

NOTE 6: When this lead wire is open, replace together with magnetron.

STANDARD PARTS

Ref. No.		Part No.	Description	Size (mm)	Q'ty	Usage
S1		XTBANE4+12FK	Screw	4X12	4	Door C
S2		XTWANE4+12E	Screw	4X12	2	Escutcheon base
					1	Reinforce bracket
					1	Power supply cord ground
					4	Outer panel
					4	Fan motor bracket B
S3		XTNANE4+8B	Screw	4X8	2	Turntable motor
S4		XTWANE4+12B	Screw	4X12	1	Capacitor bracket
					4	Base
					3	Base B
					4	H.V.Transformer
					1	Oven lamp socket
					2	Air guide D
					2	D.P.Circuit
					2	Base C
					1	Lamp cover
					1	Diode ground
					1	Bracket
					1	L.V.Transformer
S5		XTNANE4+10B	Screw	4X10	1	Fuse holder
					1	Sensor element
S6		XTC4+12BC	Screw	4X12	4	Outer panel
S7		XTWANE4+8S	Screw	4X8	2	Fan motor
S8		XYEANE5+E12S	Screw	5X12	2	Upper hinge
					2	Lower hinge
S9		XTW4+12Q	Screw	4X12	4	Bracket
					1	Door opening lever
					2	Cook lever bracket
S10		XTW4+12T	Screw	4X12	2	Door hook A
					2	Door hook B
S11		XTEANE3+6B	Screw	3X6	2	Thermal cutout
S12		XNWANE5ES	Nut	M5	4	Magnetron
S13		XYF4+AF6	Screw	4X6	1	Air guide A
					1	Reinforce bracket